SEGMENTATION IN A "TECHNOLOGY PUSH" ENVIRONMENT

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MARKET SEGMENTATION IN A "TECHNOLOGY PUSH" ENVIRONMENT

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TABLE OF CONTENTS

	Page
INTRODUCTION	1
BASES OF MARKET SEGMENTATION	4
Geographic Segmentation	4
Demographic Segmentation	4
Psychographic Segmentation	6
Behaviouristic Segmentation	7
Image Segmentation	13
Miscellaneous Bases	19
SEGMENTATION ANALYSIS AND MODELS	25
Introduction	25
AID and MAID	26
Canonical Analysis	28
Cluster Analysis	32
Factor Analysis	34
Regression Analysis	36
Discriminant Analysis	37
Multidimensional Scaling	38
Conjoint Analysis	43
OTHER MARKETING MODELS OF INTEREST	51
Segmentation Models	51
New Product Development/ Test Market Sales Models	52
CONCLUSIONS	57
ANNOTATED BIBLIOGRAPHY	

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INTRODUCTION

In the introduction of new products, Philip Morris has successfully adopted what may be called "market pull" product development. There has been some recent interest in evaluating an additional strategy, "technology push" product development, for introducing novel products. The purpose of this paper is to provide a basis for understanding an essential marketing component to both of these approaches--market segmentation.

The differences between "market pull" and "technology push" concepts can be quickly described. Market pull marketing or product development takes a consumer want or perceived need and then develops a product to meet that need. In technology push development, a product or technology is developed and then a market is hopefully created for that product. The advantage of market pull development is that demand may already exist for a product once it is created. This may not be true for a technology push product. The disadvantage of market pull development is that the products developed may not be very sophisticated or creative. (Market pull development might have continued to develop better slide rules while technology push development resulted in the hand held calculator.) Consumers are unable to be creative in expressing their wants or needs. Technology push tries to solve this by developing the advanced technology or products and then finding the customers for them. Interest in technology push development at Philip Morris has been generated by Dr. D. Ennis (memos dated February 7, 1983, May 11, 1983, and June 7, 1983). The biggest fear in following a total market pull philosophy is that a company will become technologically complacent, unable to respond to changes in the market if pre-empted by a competitor (Riesz, 1980; McIntyre, 1982). With these concerns in mind, market segmentation will be described.

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This paper will be divided into four major areas. The first section will cover various segmentation methods and how they may relate to cigarette segmentation. The second section will cover segmentation analysis--how information is gathered and analyzed, including descriptions of segmentation models. The third section will cover various marketing models which are used for things besides segmentation--new product development and long run brand share prediction, for instance. The final section will be an annotated bibliography. Sources cited in the body of the report are listed in this bibliography, although not every entry is annotated.

The amount of information in the literature on market segmentation and market modeling is voluminous. Assimilation of every single book and article would be difficult for the casual reader to accomplish. Wind (1978) is a good general article on segmentation which could possibly be read prior to any intensive research into specific segmentation areas. Myers and Tauber (1977) and Wilkie and Cohen (1977) also provide good reviews of segmentation research. Barnett (1969) and Yankelovich (1964) are early articles on the topic.

Not many articles have been written specifically about segmentation and the cigarette market. Vitz and Johnston (1965) related a smoker's image of himself to the image of his cigarette brand. Fry (1971) related various personality variables to brand choice. Mazis, et al. (1975) briefly dealt with cigarette smoker's beliefs. Other studies may have been done in the cigarette industry over the years and have not been published due to the nature of the study.

The initial premise in segmenting a market is that segments actually do exist. In other words, the assumption is that the market is not entirely homogeneous.

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Market segmentation is done for two major reasons: 1) to look for new product opportunities or areas which may be receptive to current product repositioning and 2) to create improved advertising messages by gaining a better understanding of one's customers.

One fallacy often made in attempting to segment a market is that of trying to achieve total segmentation. In other words, trying to segment the entire market according to the variables being considered. This may be possible using some variables, especially demographic ones, but it is not usually necessary. A person with a product to sell and faced with an unknown market need not be able to identify all of the segments who will not buy his product, only the one group that appears to desire/need it. This is done at Philip Morris as well. We are concerned with learning about the smoking population. Not nearly as much attention is paid to the larger segment of nonsmokers.

It is possible to segment a market in many ways. Some may not provide any useful information however. According to Kotler (1980), useful segments must possess the following characteristics: measurability, accessibility, and substantiality. A segment must be easy to measure in order to determine its size, location, and content. It might prove quite difficult to accurately measure the size of the Hispanic, illegal alien market for example. Segments must be accessible through some kind of marketing vehicle; if they are not, how can one communicate the relative benefits of one's product to that segment? Finally, the segment must be of substantial size to warrant attention. Kotler says that "a segment should be the largest possible homogeneous group of buyers that it pays to go after with a specially designed marketing program." (pp. 308-9) Segments can be perceived as opportunities. A company with limited resources needs to pick only the best opportunities to pursue.

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BASES FOR MARKET SEGMENTATION

There is no one correct way to segment a market. Often several segmentations will meet Kotler's criteria. He divides market segmentation variables into four major areas; geographic, demographic, psychographic, and behavioristic. Each of these will be discussed. A fifth area involving image segmentation will be covered as will some miscellaneous bases.

Geographic Segmentation

Geographic segmentation is the simpliest area to understand. When a market is segmented geographically, one is saying that consumer needs or the ways to fill those needs vary geographically. This can mean by region of a country, population density, or climate. Consumers in the Southeast use more vegetable shortening than any other part of the U.S. Northeastern and Midwestern regions have more small beer breweries than any other region, hence more locally unique segments. The consumption of menthol cigarettes is greater in the Southeast than in any other region of the country. Hawkins, Roupe, and Coney (1980) discuss geographic subcultures.

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Demographic Segmentation

Demographic segmentation appears to be the most prevalent form of market segmentation. This is probably because consumers are placed on definite scales of measurement which are easily understood. The information is easily interpreted, easily gathered, and easily transferable from one study to another.

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Common demographic variables are age, sex, size and type of family, income, educational level, race, and nationality. Combinations of these variables are sometimes used depending on the degree of specificity required in the segment construction. Cigarette users are often described in demographic terms. Some examples of demographic segmentation reflected in consumer products are Virginia Slims--marketed toward women, Life Stage vitamins--four types depending on age and sex, and disposable diapers--age of infant. The Cigarette Tracking Studies provide a lot of annual demographic information about the cigarete industry. Demographic information is provided for all brands. Historical data (3 years) is provided for PM and major non-PM brands. Historical demographic data is also provided for the entire market. This type of information will be very valuable in designing and analyzing segmentation studies. Most marketing studies collect demographic information as an addition to any other variables being studied.

Over the years the validity of using demographic variables in segmentation studies has been supported. Bass, Tigert, and Lonsdale (1968) make good use of demographics in describing light and heavy users. Blattberg, Peacock, and Sen (1976) state that "buyer behavior may be ...closely related to GENERAL characteristics of the household, such as demographics...." (p.154) Frank, Massy, and Wind (1972) discuss various demographic characteristics and their use in market segmentation (pp. 2942). Some of the problems that researchers seem to have with demographics stem from their attempts to segment entire markets. Demographics will not be good descriptors of segments if the segments do not clearly exist. As was stated earlier, it may not be possible to completely segment a market, but that is acceptable if some segments can be clearly identified. Demographics often prove to be a good way to describe these identified segments.

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Psychographic Segmentation

Psychographic or life style segmentation becomes a little more difficult to explain in that one is no longer looking at clearly definable, quantitative measures, but is beginning to investigate such things as social class and way of living. Wells (1975) called psychographics a quantitative attempt to place consumers on psychological dimensions. Ziff (1971) states that attempts to narrowly define psychographics have proven difficult. Ziff looks at psychographics as a way to segment the over-the-counter drug market. Four segments are developed and described based on their health concerns.

Psychographics can serve as the next step in research if a demographic study produces no clear or actionable segments. Basically when one uses psychographics in an attempt to segment a market, one is trying to incorporate part of the inner person into the understanding of that market. Rather than being concerned solely with age, sex, or marital status, personality characteristics, values and beliefs, and life style are considered. For example, the following could serve as possible descriptions of a brand's smoker group:

1) Demographic--older, more highly educated males who tend to make over $20,000 a year.

2) Psychographic--sophisticated males who are concerned about their health; masculine, but in an upscale, more affluent way; confident.

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The psychographic description looks at the inner person rather than the outward expression of the person.

Psychographic segmentation is often called life style segmentation. No one set of life styles exists, but in general terms fairly finite groupings are not difficult to develop. This type of research analyzes consumers first and then applies the product to them in hopes of discovering different usage patterns. Life style segments are usually derived by submitting a questionnaire to a random sample of people. In PED one might want to look at smokers vs. nonsmokers or one brand against another. The questionnaire would ask for levels of agreement to statements about everyday living such as "I keep my house very clean" or "I shop at several stores before buying a dress." From answers to these statements segments can be derived through cluster analysis or other form of multivariate analysis. Description of the segments or clusters is left to the researcher. This could cause problems if the researcher is not especially knowledgeable about the market in question, since improper descriptions could be assigned to the clusters.

Plummer (1974) discusses life style segmentation and finds that it does a better job in describing segments than demographics alone. Plummer's justification for life style segmentation is simple enough. He states that "the basic premise of life style research is that the more you know and understand about your customers the more effectively you can communicate and market to them." (p.33) He views life style segmentation as a combination of demographics and psychographics. Loudon and Della Bitta (1979) give several examples of how new products were positioned successfully using information from life style segmentation studies.

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Wells has conducted a lot of research into psychographics. Wells and Tigert (1971) show how psychographics (activities, interests, and opinions) can describe target audiences and product users. Wells's (1974) book on psychographics and life style is often cited and covers many general areas on the subject. Wells (1975) is a very good article on the status of psychographic research at that time. He illustrates five different uses of the research method. The eight male psychographic segments (p.201) developed by Wells are often found in other articles. These include "the quiet family man", "the traditionalist", and "the he-man". Each is described based on their psychographic characteristics. While, with the exception of Boote (1981 and 1982/3) and Bernstein (1978), recent published work on psychographics could not be located, the method is not outdated. In fact, it is a segmentation method which could easily be applied to the cigarette market.

Behavioristic Segmentation

Kotler's fourth and final group of segmentation variables are behavioristic ones. This includes such areas as purchase occasion, benefits sought, user status, degree of usage, degree of loyalty, readiness stage, and marketing factor sensitivity. In general consumers are segmented based on knowledge of the product, attitude, or response to the product. Much has been written on the various facets of behavioristic segmentation. For instance, Hutt, Muse, and Kegerreis (1972) discuss the behavioral differences in Maverick and VW buyers. McDonald and Goldman (1979) is a good general article concerning behavioural segmentation strategies.

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Purchase Occasion Segmentation

In purchase occasion segmentation consumers are grouped based on the reasons or times they purchase a product. Beer drinkers might be classified as 1) the heavy drinker who tries to escape, 2) social acceptance or accomodation, 3) the one beer drinker when dining out. A beer company would look for a new occasion or use for which beer consumption might be appropriate. Arm & Hammer's novel suggestions for using baking soda are good examples of this. Purchase occasion segmentation may have applications in the cigarette market as well given the social nature of the product. Dickson (1982) discusses person-situation segmentation in the context of other segmentation research.

Benefit Segmentation

Over the past few years, segmentation schemes originally classified as psychographic have expanded into new areas, partially due to the ambiguity in the definition of the original term. Benefit segmentation falls into this category. Benefit segmentation is a method of dividing up a market based on the benefits derived from or desired in a product, such as economy, convenience, or prestige. In cigarettes this might mean that one group of people smoke for the tobacco flavor, another for social acceptance, perhaps another for a cooling menthol sensation, etc. For benefit segmentation to be feasible, each group seeking a different benefit should be different in some way which can be identified and acted upon. One appealing aspect of benefit segmentation is that it does not involve describing a market after the fact. Rather, the aim is to try to determine why a person buys a product and,

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therefore, why similar people might buy the product if the benefit is communicated to them.

Examples of benefit segmentation studies can be found throughout the literature. Some of these are Yankelovich (1964), Haley (1968), Calatone and Sawyer (1978), and Myers (1976). Haley's article was particularly successful in dividing the toothpaste market into benefit segments. Myers and Tauber (1977) devote a chapter to benefit structure analysis and is useful as a general article on the subject. Myers (1976) sees benefit structure analysis as a method of finding new product opportunities in "very broad product/service categories," such as new foods, drinks, etc. An extension of this could be a search for new smoking experiences or new benefits derived from cigarettes.

A benefit segmentation study should attempt to do three things: 1) determine the benefits people look for in a product, 2) the kinds of people looking for each benefit, and 3) the proximity of existing brands to these benefit needs. Perceptual mapping or multidimensional scaling assists in doing this. Product benefits are placed on a map and current product offerings are placed on the same axes. Differences between current products and benefits sought indicate potential for the development of a product which is more desirable than current products. Green (April 1974) provides a good example of this in the sports car market. A couple of problems encountered in benefit segmentation are difficulty in determining benefit group size and semantical variations in stated benefits.

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Usage Incidence Segmentation

Stout (1977) describes a form of segmentation called usage incidence segmentation which is an extension of benefit segmentation and purchase incidence segmentation. Segments are based on the reasons or occasions a product is used. The attempt is to find out how people are using a product by identifying the "need states" of the consumer. One way to gather this type of information goes beyond free response interviewing. The respondent is given a long list of statements (potential reasons) and asked to mark each one that applies to the question: Why have you used this product (smoked a cigarette) in the last 24 (or 48) hours? One attempts to go beyond the obvious answers to try to find out the true reasons for using the product and therefore the benefits sought or gained.

User Status Segmentation

User status segmentation divides consumers according to their use of a product (but not the amount of the product they use). Consumers may be nonusers, ex-users, potential users, first-time users, and regular users. Marketing messages will be different depending on the segment one is tailoring the message toward. An advertisment to a nonuser would probably be informational and about the product class in general while a regular user might be told of the merits of one product vs. a competitor.

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Usage Rate Segmentation

Usage rate segmentation is separate from usage status segmentation in that only users are considered. This may be of interest to PED since we are usually concerned with smokers as opposed to nonsmokers. Usage rate segmentation divides consumers into light-, medium-, and heavy-user groups. Heavy users may consume a disproportionately large amount of the total consumption of the product (Loudon and Della Bitta, p. 93). Ideally each group will have some sort of identifiable characteristics to which marketing messages can be targeted. Depending on marketing goals and the relative strength of brands within the usage groups, a company may want to try to build share in the light or heavy groups.

One of the things that makes usage rate segmentation so popular is that many companies can use it and because many market research firms and syndicated services can supply data regarding product usage rates based on several demographic and geographic characteristics. Bass, Tigert, and Lonsdale (1968) used demographic (socioeconomic) variables to describe the differences in light and heavy users of several products.

Loyalty Status Segmentation

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Segmentation by loyalty status is attempted when a firm believes that its really loyal customers have characteristics which are identifiable. If these characteristics were identified, the company can create advertising messages which are addressed to other consumers with the same characteristics. Loyalty status can be determined by purchase diaries and much can be learned about a

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market from them. If a person is loyal to your brand and one other, you can find out which brand it is (e.g. Crest and Colgate) and position your product in some way superior to the competitor. Price and availability of the product must be considered when doing loyalty status segmentation. Frank (1967) did not find loyalty status to be a particluarly strong segmentation procedure.

Other Behavioristic Bases

Two other segmentation schemes which Kotler mentions are buyer readiness and marketing factors. Buyer readiness segmentation separates people based on how likely they are to buy a product. Some may be unaware a product exists, some may be eager to buy it. Marketing effort and message will vary depending on the relative size of the groups. Segmentation by marketing factors, such as price, advertising, coupons, etc., groups consumers based on their responsiveness to these various marketing tools (McCann, 1974). This can be helpful to a company in allocating its resources. Neither method seems to be applicable to the cigarette market.

Image Segmentation

Another body of research may be applied to segmentation studies, especially in the cigarette industry. In addition it can provide valuable insights into why consumers make the product choices they do. This area involves consumer's self-image or self-concept and its relationship to the image of the product. Several authors have written articles on the subject (Dolich, 1969; Fry, 1971; Ross, 1971; Ostlund, 1974; Landon, 1974; and Sirgy, 1982) and research is still being conducted in the field. Segmentation based on self-image or self-concept

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does not easily fit into one of Kotler's four categories. It is really a combination of psychographic and behavioristic aspects of the consumer. It really can be considered a fifth area according to Kotler's classification.

To say that the cigarette market can be segmented based on image or self-concept variables, one must look at how cigarettes are currently presented to the public. In other words, what is the marketing message that is being delivered to the consumer. By and large it is a message based on image, product as well as personal. Cigarette brands, especially large ones, each try to differentiate themselves from other brands by having their own distinctive image. Some of these might be the young, female, outdoors-oriented Salem Lights smoker; the western, be-your-own man Marlboro smoker; the no nonsense, flavor conscious Merit smoker; and the elegant, refined, affluent Barclay or B&H Deluxe Ultra Lights smoker. In an ideal sense each brand of cigarettes would appeal to a distinct image or concept segment. With so many brands on the market however, these targeted positionings often become blurred or overlap. For instance, the blue collar image is communicated in Winston, Raleigh, and Chesterfield among others. This phenomenon probably exists for several brand "clusters", i.e. a dominant brand with a well defined image with some smaller brands clustered around trying to exhibit the same image.

Why all this concern with image? Why not just say "Here, we have this cigarette that we make. It's in supermarkets and drugstores. Go buy it."? If there were only a few cigarette brands we could do that. (AT&T did not advertise telephones while it was the only manufacturer of them, only the uses of telephones.) Well over 200 cigarette brands exist however, making the cigarette

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market one of the most diffused consumer products markets in the country. Some form of distinctive feature is needed to get the consumer to consistently choose a product. Distinctive features can be product oriented (the unique "hill holder" clutch in a Subaru), service oriented (private hospital rooms at semi-private rates), or image oriented (the Marlboro man). Image oriented features can be the toughest to describe and create, but once established in the consumer's mind, they can generate years of consumer loyalty.

Only a few cigarette brands have attempted segmentation and positioning based on a distinctive product feature and most of these have been based on filters. The Tareyton charcoal filter and Parliament's recessed filter are good examples. Merit's "enriched flavor" process could be considered a product feature although the physical appearance of the product was not changed. No service featured cigarettes come to mind. Image based cigarettes abound. This may seem wrong to the typical cigarette researcher because he/she can point to many product distinctive features in cigarettes. To understand a consumer's viewpoint one must consider the relationship between the consumer and his/her cigarette. The consumer may not know or care about different flavors, blend mixtures, or filter construction per se. Rather he/she may be looking for such things as good taste, aroma, something to put in a nervous hand, or something to use to project a certain statement about him/herself. If they are dissatisfied with their brand, they may not make a rational evaluation of the other brands available and then pick a new one. Rather they may switch fairly randomly basing their decision on such things as advertising and advice from friends until they find a satisfactory brand. The image a cigarette possesses has an impact on this selection process.

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Self-concept or image segmentation can be done in many ways. A large body of research has been devoted to these areas and others such as personality traits and product choice (Evans, 1959), ideal self-concept as opposed to self-concept (Landon, 1974), and brand image and self-image similarities (Dolich, 1969). Early studies often had subjects take a standard personality test and then relate the results to some sort of product purchase or usage rate. For instance Vitz and Johnson (1965) use a personality test to show that a correlation exists between masculinity of cigarette smokers and the perceived masculinity of the brand they consumed.

According to Grubb and Grathwohl (1967) this image type of research attempts to "link the psychological construct of an individual's self-concept with the symbolic value of the goods purchased in the marketplace." (p.23) Self-concept is more narrowly defined than personality--being concerned with how a person perceives himself. Goods are symbols which communicate something about the individual to his "significant references." (p.24) For instance, a person may buy conservative clothing not for warmth and protection, but rather for what such attire will say about himself to others.

Dolich (1969) and Landon (1974) discuss two forms of self-concept or self-image. One is the regular self-concept and the other is the ideal self-concept, i.e. how you would like yourself to be. Basically a consumer will purchase goods that either enhance his/her self-image or goods that make the consumer feel closer to his/her ideal self-image. A person may use self-image when buying some products and ideal self-image when buying others. The type of product is often a factor. A person might buy mouthwash based on his/her self-image more than their ideal self-image. Their ideal self-image would not have bad breath.

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Dolich and Landon both found that a relationship exists between self-concept and brand preference. Sirgy's (1982) article is particularly thorough in the areas of self-concept theory and consumer behavior. He discusses much of the work of authors over the years and points to areas where additional work is needed. It is a good article for the interested reader.

One criticism of self-image and self-concept research is that of cause and effect. In other words, if one investigates self-image about a product already purchased, perhaps that consumer's self-image has been altered by the purchase of the product. For instance, suppose an introverted conservative man buys a convertible Chrysler because he got a very good deal on the car. He only bought the car because of the price. If later on he likes the car, his self-image may have changed and if he is then studied, one may find that he perceives himself as being more extroverted because he owns a convertible. A researcher could infer that extroverted people buy convertibles and introverted people do not. For rarely purchased consumer durable goods this is a valid concern. It is not as serious a problem for more frequently purchased consumer products since there are fewer non-image reasons for a person to REGULARLY purchase a good radically different from his/her self-image (other than the fact that no product currently available meets his/her self-image).

Another criticism brought out in DeLozier and Tillman (1972) is that most researchers use products with which respondents are already familiar. They argue that for the sake of consistency with self-image, consumers gravitate toward brands which more closely resemble their self-image. A researcher seeing the result of this could predict too strong a relationship. They used brands

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unfamiliar to the subjects yet still found the self-image measures to be useful in predicting brand choice.

Although specific suggestions for research that PED can do will be presented later, some general comments seem appropriate here. While increased knowledge of the relationship between self-concept and purchase intention is desirable, such work should probably be left to academicians. It is important for us to understand how smokers relate the image of the brand they smoke to their own image of themselves. Knowing the image the cigarette brand has in the consumer's mind is important in and of itself. One example of the type of research PED could do using the current POL panel would be something similar to what Dolich (1969) did. A questionnaire could be sent out to a variety of smokers asking them to rate on a seven or nine point scale how they perceived different brands on some image criteria such as masculinity/femininity, sophistication, and independence. Many other image criteria could be put on the questionnaire as well. After evaluating several brands, the respondents would rate themselves (and maybe their ideal self-image) on the same dimensions. The brand they smoke would also be rated. The brand seen as closest to their image of themselves could be identified and compared to the brand they currently smoke. Some brands may more closely match the smoker's self-concept than others. Marketing and new product opportunities could exist where a smoker's self-image and brand image do not match very well.

Multidimensional scaling, which will be discussed later, can also be used to show the differences between self-images and brand images. Respondents could be asked questions similar to the above study and maps could be created showing these differences. A Winston smoker could be asked how he ranks various brands

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based on masculinity/femininity, degree of sophistication, and independence. He would then rate himself on the same dimensions. Canned computer programs could create composite maps for each brand's smokers. Again marketing and new product opportunities could exist where differences in a smoker's self-image and the image of his brand exist. Information could be gathered on one questionnaire for more than two dimensions and these could be compared on different maps.

Miscellaneous Bases

Brand Clustering

Another form of segmentation not covered yet is segmentation by brand clustering or brand grouping. This is separate from the brand image clustering mentioned earlier. Brand clustering refers to a concept that similar people will purchase similar types or groups of products. An extension of the theory is that people who purchase the same products engage in similar activities and have similar interests. (Hopefully, beyond the obvious such as people who purchase shotgun ammunition tend to go hunting.) If one could identify a profile of consumption and/or activity for, say, B&H smokers and smokers of non-Philip Morris brands one could possibly find a brand that is vulnerable to penetration by B&H. This could be accomplished by incorporating activities associated with the similar product consumption patterns into advertising.

Such a study could be conducted using the POL panels in the following manner. Panel members of various brands would be sent a questionnaire which would solicit information on level of consumption of or participation in certain goods or activities. We might find that Camel smokers drink more Schlitz beer than

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other smokers or that Newport smokers water ski more. Responses would be kept anonymous in hopes of gaining better information on image/related goods and activities, if any were asked. Much time would be spent on questionnaire design to ensure a good composite of each smoker group. Analysis of the data could be complicated due to the number of questions but multivariate analysis could be used to simplify the data and form useful clusters of consumers.

A corollary to the brand clustering concept is one of buying a product to round out a set of products, i.e. buying a product based on other products already owned. The practice can be seen for goods such as liquors, records, magazines, and sometimes cars. According to Wind (1977) marketing activities for these products must take this type of purchase determinant into account. McAlister (1979) agrees with Wind and states that for some products a dependence among selections does occur. He suggests a lottery model which incorporates this dependence into the determination of consumer choice. Cigarettes are not purchased in this manner so we should not concern ourselves with the theory to any great extent.

Product Feature Segmentation

Certain segmentation schemes that have been used in the cigarette industry in the past should perhaps be reevaluated at this time. Two bases come to mind: product feature segmentation and health segmentation. Product feature segmentation has revolved for the most part around filter innovation (Doral's chambered filter, Parliament and Lark) and blend innovation (Merit's "Enriched Flavor" process, all-natural Real). Product feature segmentation involves

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creating an innovation and then developing a segment which uses the product at least partially because of the innovation. Unless the innovation cannot be imitated, the segment will begin to break down as soon as competitors introduce their own versions of the innovation. Since no cigarette innovations which are obvious to the CONSUMER have occurred in the last few years, this type of segmentation may not be relevant at this time. New innovations could certainly change this situation however. R&D at Phillip Morris is currently working on several projects that can be considered true product feature innovations which deliver definite benefits to the consumer. The evolution of product feature segments based on these innovations is possible.

Health Segmentation

Health segmentation has existed for some time as well. It could best be described as segments based on some health concerns with smoking. The segments would be based on tar and nicotine level classifications, as well as perhaps the presence of menthol. Philip Morris's use of this segmentation may be seen in the way to which different groups of cigarettes are referred (ultra low tar, low tar, full flavor). Since a large appeal of segmenting a market has to do with finding a segment that is currently not being adequately served, health segmentation variables may be exhausted. There are currently a variety of brands in every health segment classification. Both of these segmentation methods may be useful again in the future, but not until new products are developed which could create new segments in these areas.

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Other Comments

In all this discussion about different ways to segment markets, little has been said about the nature of the segments themselves. Each time we refer to segments, we mean a group of consumers in the market who can be described based on the variables being used. They can be users or nonusers, heavy or light users. But they must exhibit some sort of common characteristic which makes them distinguishable from the rest of the market. Another feature of these segments is that they are not static. Most of the studies mentioned so far refer to a one-time segmentation study. This is useful in providing a snapshot of the structure of a market, but not how it is changing. Segments are not static and should not be studied as such. Weinberg (1973) found that while distinct market segments can exist (and, in fact, do exist for new product classes), they eventually break down over time. This breakdown is caused by competitive factors such as the entry of new brands. Competitive actions designed to introduce trial of their brands can also erode distinct segments. The home computer market is an example of this type of segment erosion.

Calatone and Sawyer (1978) found that benefit segments showed some stability over a two-year period, but a fair amount of individual switching among segments did occur. Ongoing segmentation studies prove to be more valuable than one-time shots in that trends can be discerned and new segments recognized (or dissatisfaction with current segments) as they are developing. For example, the benefit of the Cigarette Tracking Studies is enhanced due to the fact that they are annual reports. Any segmentation research considered by PED should be evaluated on its ability to be conducted over time.

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The commonly used bases for segmentation research have now been identified and discussed. Some are currently being used in the cigarette industry, a few are not appropriate to use. One question that may come to mind is how is the information gathered in order to classify a market into segments? Usually the raw data is gathered through some form of mail or hand delivered questionnaire. Some segmentation models require sorting or other form of one-on-one interviewing. Usually marketing research services or consultants can handle the entire study, from panel selection to final data analysis. This can get quite expensive, however. The existence of the POL panels and the computer capabilities at R&D should serve to reduce this expense if outside services are utilized. PED's capability for organizing and conducting focus groups will be important in the design of segmentation studies and questionnaire preparation.

The typical questionnaire will seek the following types of information. Demographic data such as age, sex, education and income are almost always needed. Consumption information about the product/service being studied is usually crucial. This information is usually about usage rates, methods of use, activities where the product is used, amount of use, and why the product is used. For some products this may be all the information that is needed. Much more can be asked of the respondent, however. As mentioned earlier, psychographic studies may ask for a respondent's agreement with certain statements about people in general or themselves in particular. These may be statements about general life style (I like to invite people over rather than go out) or they can be product class specific (I serve chicken more often than beef). Product specific questions fall into the grey area between psychographics and brand image studies. Even so, these questions can be asked as well.

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The existence of the POL panels increases the chances of PED conducting valid cigarette segmentation studies. This is true for several reasons: 1) The panels represent a cross-section of smokers of all ages, sex, tar levels, and PM and non-PM brand smokers; 2) studies can be sent to smokers of small brands relatively cheaply and efficiently; 3) the panelists are accustomed to filling out questionnaires; and 4) they are familiar with the Product Opinion Laboratory. All of these factors will serve to increase response rates and help to insure that high quality data is gathered. Additionally, several members of PED have experience in questionnaire design, data interpretation, and computer analysis of the information.

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SEGMENTATION ANALYSIS AND MODELS

Introduction

Beyond the simple questionnaire-type format for gathering information, several other methods and modeling techniques have been developed to assist in market segmentation and market modeling. Some of the methods do utilize questionnaires or purchase diaries while others require more complicated forms of data collection. The methods to be covered include Automatic Interaction Detector (AID) and its multivariate counterpart, conjoint analysis and its extensions, multidimensional scaling (MDS), and canonical analysis. Several specific models will also be described which attempt to do such things as predict test market results, position new products, and predict new product sales. Each method will be described along with references for further research. While some of these may not be specifically appropriate for market segmentation studies, they will help provide information on market structure and new product introduction into markets, issues which are associated with market segmentation and "technology push" product development.

The purpose of this section is not to educate the reader on every minute detail of each analytical technique. Rather the attempt is to present each technique in general terms along with multiple references for further research. Where feasible each technique's discussion will end with a brief summary. Some sections will cover general concepts and areas of research, others will be on models which have been developed for a specific purpose. Some techniques will be found to have great promise in cigarette segmentation research, others will be useful in product positioning or new product development.

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Before each specific technique is covered, some general sources should be cited. With the exception of AID, Sheth (January 1971) provides a good discussion of multivariate techniques. The first few pages of Green, Halbert, and Robinson (1966) are also good. Green and Tull (1978), Myers and Tauber (1977), and Urban and Hauser (1980) are texts which will be cited frequently.

AID and MAID

Automatic Interaction Detector (AID) is a technique which produces an output which is simple to interpret and to communicate to managers (Assael, 1970). The output is a tree-like diagram which successively splits a sample based on the degree of variance explained by the independent variables. The method was developed by J.A. Sonquist and J.N. Morgan in 1964. AID starts with a single dependent variable and then systematically goes through the independent variables looking for those characteristics which do the best job in explaining the variation in the dependent variable. The most important predictor is named first (the first split in the tree) and the process is repeated again and again until user-imposed constrants are reached or the variables remaining do not improve predictive accuracy.

AID is found to be a powerful tool for identifying non-linearities and interactions which may be present in data. Frank, Massy, and Wind (1972) find that AID "performs an extremely large number of dummy variable regressions which test for non-linearities and/or interactions without the requirement that the analyst on an a priori basis specify either the model to be tested or the corresponding transformations required of the independent variables." (p.147)

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AID is similar to stepwise multiple regression techniques except that in stepwise multiple regression the researcher must specify the non-linearities, among other things, being considered.

AID also has some drawbacks which may inhibit its use in some situations. Doyle and Fenwick (1975) cover several of these such as sample size, inter-correlated predictors, noise, and stopping rules. Sample size is an often mentioned criticism. Since the sample is successively split into ever smaller groups, a large initial sample is needed. According to Doyle and Fenwick as many as 2000 respondents may be needed. AID does not take into account any inter-correlations among independent variables. In other words, once a variable is split off, any other variables correlated with it are less likely to be chosen. Noise in the data may create tree instability. Different samples from the same population may result in different trees. A fine line must be walked when determining stopping rules. If the tree is stopped too soon, important variables may be left out. If the rules are not strong enough, the problems with noise (inability to duplicate results) will increase.

Several commercial studies utilizing AID have been reported in the literature. An early application is described by Assael (1970). Assael and Roscoe (1976) discuss a study of long distance telephone usage done by AT&T. Martin and Wright (1974) describe a study of women consumers in retail markets and compare the study with a different tree diagram based study. Green and Tull (1978) give the results of a study of car quality and probability of remaining "make loyal." AID is basically recommended as an initial screening procedure to identify variables which may be important. They can then be analyzed by other multivariate techniques. It is commonly suggested that AID not be used by itself in segmentation work.

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Multivariate AID (MAID) is similar to AID except that more than one dependent variable can be used at a time. Assael and Roscoe (1976) used AID for segmentation using one dependent variable and canonical analysis for more than one. MacLachlan and Johansson (1981) suggest that MAID be used instead of canonical analysis for multivariable segmentation. Gillo and Shelly (1974) pioneered work in this area. The Gillo (197?) booklet is also dedicated to the topic. MAID suffers from many of the same problems listed above for AID. MacLachlan and Johansson offer solutions to some of these problems. The number of published studies using MAID are considerably fewer than those using AID. This is probably due to the fact that MAID is a newer technique.

To summarize, AID has been used in several studies and its chief advantage is the simplicity of the model's output. It is easy to interpret and explain to others. It should not be used alone, but rather as an initial screening method to identify variables which should be analyzed by other techniques. MAID is the multivariate extension of AID. Both techniques suffer from the same shortcomings.

Canonical Analysis

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As mentioned earlier, canonical analysis, or canonical correlation, can be used where there are multiple dependent variables. It can provide insight into the way two sets of data are interrelated. For instance, consider a study of hand mixers. Consumers might group product attributes such as number of speeds, weight, length of cord, detachable beaters, etc. They also might group companies together such as GE, Oster, Hamilton Beach, and any number of private brands. These might be rated on quality, image, service, warranty, reputation, etc. Canonical analysis can indicate relationships between these sets of data. An additional set of demographic data could also be added.

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Hotelling (1935) first developed the method almost fifty years ago to deal with relating two sets of variables measured across the same group of respondents. Even though canonical analysis has existed for some time, its use in market segmentation studies has been limited. According to Myers and Tauber, canonical analysis can relate two or more sets of variables, gathered from the same group of respondents, "in both a clustering and predictive way." (p.84) Other multivariate techniques may do one or the other, but not both.

A question arises as to whether or not segments derived from a canonical analysis are segments in the normal sense of the word. From a technical standpoint the groups may not be segments in that they may not represent similar groups of people. They are really only groups of response patterns which can be predicted using a linear combination of variables derived from a questionnaire. Different segments could be derived from other segmentation techniques. However, the segments derived are actionable from a managerial standpoint. The segments represent response patterns such as amount of a product used and important consumer characteristics, which can be described by the manager in terms of demographics, and media usage. These "segments" can be reached. A cluster analysis might reveal discrete segments, but not how to communicate with them. Myers and Tauber state that canonical analysis can be very helpful in market structure analysis even though it is not a technically perfect tool for market segmentation.

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Green, Halbert, and Robinson (1966) provide a step-by-step comparison of several multivariate techniques including canonical analysis. They claim that canonical analysis may be viewed geometrically "...as a measure of the extent to which a group of individuals occupies the same relative position in the space spanned by

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the predictor (independent) variables." (p.33) They also mention two limitations of the technique: 1) both sets of variables must be interval scaled, and 2) the observed data must be randomly drawn from the same multinormal universe. Green and Tull (1978) describe canonical correlation as dealing with "...both description and statistical inference of a data matrix partitioned into at least two criteria and at least two predictors where all variables are interval-scaled and the relationships are assumed to be linear." (p.410)

Three additional articles provide insights into using canonical analysis. Alpert and Peterson (1972) are concerned with the proper interpretation of analysis results especially concerning the description of relationships between variables. Four points are mentioned for consideration: 1) coefficients reflect shared variation in linear composites of variables, not the variables themselves, 2) canonical weights and canonical correlations must be considered during interpretations, 3) each pair of canonical variables is independent from other pairs, and 4) determination of inclusion cut-off points depends on the purpose of the analysis. One must be careful not to twist the data to fit one's research goals by manipulating these cut-off points.

Fornell (1978) looks at three forms of canonical analysis: correlation, variate, and regression. Canonical correlation analysis is by and large what we have discussed so far. Canonical variate analysis looks at the "within-structure" of the variates. The process is similar to factor analysis in reducing the number of variables studied. Canonical regression analysis is similar to ordinary regression except that the dependent variable is multidimensional. The dependent variable used is a linear combination of observed dependent variables.

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Lambert and Durand (1975) provide us with potential shortcomings in using canonical analysis. They focus on three in particular: 1) shared variance, 2) weight instability, and 3) construct interpretations. Shared variance is the amount of variance which is present in both sets of variables, i.e. the intersection of the variables. Canonical analysis does not identify the amount of shared variance present. Weight instability can be increased due to multicollinearity among the variables. Creation of subsets from the original sets of variables may cause problems since the subsets may lead one to make false interpretations. Nevertheless, canonical analysis is found to be useful in showing overall relationships among criteria and predictor variables, especially if little knowledge exists about the relationships beforehand.

Some of the other articles utilizing canonical analysis are the following. Alpert (1972) used the technique to study the impact of personality in market segmentation. Farley and Ring (1974) discuss the technique in conjunction with buyer behavior. Frank and Strain (1972) used canonical correlation analysis to determine the relative importance of variables as predictors of purchase behavior. Sparks and Tucker (1971) investigated the relationship of personality traits and product use patterns.

In conclusion, canonical analysis is a multivariate method which is able to show the relationships between more than one SET of variables. Most studies have used two sets although more than two can be used. The technique has not been used as much as other techniques in marketing segmentation projects. It is a technique which is especially useful when little is known about a market and consequently, variables cannot be intuitively eliminated from a study.

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Cluster Analysis

Cluster analysis is used extensively in numerical taxonomy (Sokal and Sneath, 1963). The usual objective of a cluster analysis is to separate objects, respondents, whatever, into groups such that homogeneity is maximized within the groups and heterogeneity is maximized between the groups. Objects are classified into only one group and members of a group are generally assumed to be indistinguishable from one another. One of the unique features of cluster analysis is that there is no preassignment of respondents into categories.

Myers and Tauber (1977) find that cluster analysis is an effective segmentation technique. They divide cluster analysis into two main areas: hierarchical clustering and partition clustering (p.77). Hierarchical clustering is used more often for segmentation projects. Clusters are created in a stepwise fashion, each larger cluster becoming less and less homogeneous. Green, Wind, and Jain (1973) provide a good example of this type of clustering. In partition clustering, the number of clusters are determined by the researcher before the analysis begins. The goals of within group homogeneity and between-group heterogeneity are then maximized by the algorithm being used. The number of clusters designated depends on the type of study. Each cluster generated can be considered to be a segment. Myers and Tauber find cluster analysis to be superior to factor analysis for market segmentation.

According to Green and Tull (1978), the researcher makes the initial assumption that clusters in the data do exist, i.e. the data is not entirely homogeneous. Several pages (pp.440-55) of their book are devoted to cluster analysis and its applications. They classify clustering techniques in much the same way that Myers and Tauber do although they refer to partition clustering as

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nonhierarchical and and then divide it into three subgroups (p.446). Descriptions of the clusters derived in a study are usually based on the centroid or average value of the cluster. Statistical reliability is found to be hard to determine yet this should not limit the use of the method. Green and Tull also provide some commercial applications of cluster analysis.

Worcester and Downham (1978) state that cluster analysis has been used mainly to cluster people (PRIZM for example), but it is by no means limited to this. The variables that the groups are being clustered on are usually characteristics which describe the consumer (attitudes, needs, demographics, etc.). Behavioral and brand image information should probably not be used in cluster analysis (W&D p.360). Clusters may change over time and this should be considered when making decisions based on a cluster analysis study.

Several articles have been written on the subject of cluster analysis or have used the technique in a marketing study. Punj and Stewart (1983) provide a good review of the technique. Lessig and Tollefson (1971) have written a particularly good article which describes a cluster study used to identify consumers likely to respond similarly to marketing stimuli. A relationship between buying behavior and personal characteristics was also investigated. Doyle and Hutchinson (1976) find cluster analysis to be superior to AID and regression analysis for market segmentation. Peterson (1974) found that cluster analysis was an effective tool for market structuring. It described AID as a part of cluster analysis. Arabie, et al. (1981) introduce a new type of cluster analysis by no longer requiring that objects belong to only one cluster, i.e. clusters can overlap or intersect in some way. This type of clustering might be useful to PED given the complicated nature of the cigarette smoker. He/she may simultaneously belong to more than one cluster based on the dimensions being studied. The ADCLUS model described by Arabie, et al., attempts to incorporate

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this condition into the clustering technique. The result of this type of research could be to develop several target segments of consumers, each different yet all of which share a common characteristic.

An often cited use of cluster analysis is the determination of test market locations. This is seen in Day and Heeler (1971) and Christopher (1969), and Green, Frank, and Robinson (1967). Other articles on cluster analysis include Funkhouser (1983), Klastorin (1983), Ritchie (1976), and Shepard and Arabie (1979).

Cluster analysis has had many uses in the field of market segmentation and will continue to be utilized. It is found to be superior to AID and factor analysis in segmenting markets. The goal of cluster analysis is to create homogeneous clusters of consumers or products which are as different as possible from each other. The technique can be combined with other analysis methods (such as MDS), if necessary.

Factor Analysis

Factor analysis is a technique which has already seen extensive use in PED. Consequently, detailed explanation of the concept here would be redundant. Factor analysis is often used for data reduction or summarization. The researcher uses one of many factor analysis techniques to look at the degree of association among all of the variables, factor analysis is not concerned with dividing the data into dependent and independent sets. Factor analysis can be used in market segmentation as it has been used in POL studies. Green and Tull (1978) show how the technique can be employed in an image study of

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"noncustomers." (p.421) This type of research could easily be adopted to an image segmentation study of smokers using the 7-point scales that the POL panellists are familiar with.

Green and Tull devote several pages to factor analysis and a specific technique-principal-components analysis (pp. 418-39). Chapter Four of the Myers and Tauber book is also devoted to factor analysis, although in the context of product positioning. Cooper (1983) provides a good technical review of the technique. The technique is also found to be adaptable to metric multidimensional scaling (and nonmetric scaling techniques) which will be described shortly (MacCullun, 1974). Hauser and Koppleman (1979) find that factor analysis is a superior predictive tool when compared to discriminant analysis and similarity scaling.

According to Green, Halbert, and Robinson (1966) factor analysis is concerned with "reducing a set of observed relationships...to a smaller, more parsimonious set of variables which can be used to reproduce the original set of intercorrelations with little loss of information." (p.33) Myers and Tauber simplify it even more by saying that factor analysis "...simply performs an exercise in semantics by identifying groups of similar statements." (p.42) One thing the researcher must be wary of is in naming these smaller sets of variables or statements. Factor analysis does not provide these names. The researcher must be sure that his/her description of these sets fits with the larger set of variables from which the consolidated sets were obtained.

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Other articles on the subject include these two: Ekeblad and Stasch (1967)--a general article on the technique and Heeler, Whipple, and Hustad (1977)--

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describes a factor analysis study of attitudes. Urban and Hauser (1980) discuss the use of factor analysis in producing perceptual maps (pp. 195-212, 216-7).

To summarize, factor analysis is currently used by PED in POL studies. The concept can also be applied to the areas of market segmentation and product positioning as is illustrated by several articles.

Regression Analysis

Regression analysis has been extensively used in marketing research. Often its use has been to predict demand or sales of a product at some point in the future. Simple regression involves determining a linear relationship between an independent variable and a measured response. For instance, the amount of snowfall in Minnesota may be used to predict the demand for snow blowers in the state for that year or the next. Multiple regression involves the use of several variables to predict the level of the dependent variable. Extending the above example, the demand for snow blowers in 1983 could be a function of snowfall in 1982, advertising in 1982, unemployment in 1983, and predicted snowfall for 1983. Any number of variables could be incorporated into the regression equation, although some variables may have more predictive power than others. Similar equations could possibly be constructed for prediction of cigarette demand using historical data and relevant current data.

The concept of simple and multiple regression as well as excellent descriptions of the technique can be found in several texts. Two of these are Worcester and Downham (1978, pp.325-7) and Green and Tull (1978, pp.303-38). Wildt and McCann

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(1980) describe a regression model which can be used for segmentation research. It attempts to explain variation in comsumption data by inserting an "inherent component of randomness" into the model.

Discriminant Analysis

Discriminant analysis is often described with regression analysis because both techniques attempt to predict something about the dependent variable. In regression analysis some level of consumption is predicted, in discriminant analysis the dependent variable's membership in a class is predicted by whether or not certain conditions apply.

For example, suppose we wanted to classify people as users and nonusers of a product. Depending on the product we might look at such things as age, income, expenditures on substitute or complimentary goods, and attitudes toward a specific thing. By conducting the analysis we might see that respondents that fall into certain categories tend to use the product and others do not. Our marketing plan could be directed toward people who also fall into these categories and who are nonusers. Pool owners might tend to be members of a private club, have teenage children, and be homeowners. Advertisements for pools could incorporate these characteristics into their messages.

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Green and Tull (1978) describe discriminant analysis and suggest that the technique can be used to answer questions such as: What are the differences among consumers that are loyal and nonloyal; are the purchasers of competitive products different demographically; and what are the preference patterns of

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different people? Other articles which deal with discriminant analysis include Morrison (1969), Ostlund (1974), Darden and Reynolds (1974), and Bass and Talarzyk (1972).

Discriminant analysis is used widely in marketing research. It is very helpful in learning about the differences in users and nonusers and in identifying certain qualities about users. Morrison states that the most common use of the technique has been in classifying loan seekers as good or bad credit risks. Discriminant analysis may not be the best method available to segment a complex market such as the cigarette market.

Multidimensional Scaling

Multidimensional scaling (MDS) is a multivariate technique which was originally developed to measure human perceptions and preferences. One of the reasons MDS is popular is similar to that for AID--the output is easy to understand and explain. Usually a variety of products, attitudes, benefits, etc. are graphed on a two dimensional plot based on the degree of similarity between the items as determined by respondents. Respondents might be asked how do these products compare (on a x-point scale) in regards to strength, tobacco flavor, and other sensory parameters. Several product pairs could then be given and the information could be computer analyzed to generate the maps based on these similarity ratings. In addition, respondents can be asked to rank the dimensions so that the most important determinants of purchase behavior can be identified and mapped.

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Taylor (1971) presents a fairly simple description of mapping and its use to date in business. It is a good initial article on the subject for the

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interested reader. He states that mapping can fall into two main areas--buyer perception and buyer preference. Buyer perception is illustrated with an often used example--creating a map based on the respondent's estimates of the distances between known points (in this case the state of Michigan). Green and Tull (1978) show a similar example for the entire United States (p.463).

Throughout the literature one finds references to metric MDS and nonmetric MDS. Metric MDS involves mapping using actual or estimated differences. Nonmetric MDS involves mapping using ranked differences. (A and B are two units apart, A and C are three units apart, or A and B are closest, A and C are next closest.)

Green and Tull agree with Taylor in that the true strength of MDS lies not in mapping physical differences, but rather in mapping psychological differences. They illustrate how a respondent's, or group of respondents', preferences can be incorporated into the MDS model. A map can be created which shows each brand as it is perceived by the respondents as well as the respondents' ideal point or most preferred combination of the dimensions mapped. The use of vector models is also discussed (p.471). A vector model is where the dimensions are desired into infinity by the respondent (lowest tar or most tobacco flavor). Johnson (1971) provides a good example of this type of model.

The information needed for an MDS study can be gathered in a variety of ways. Rankings and perceptions can be gained by personal interview and by mail or hand delivered questionnaire. Other analysis techniques can be combined with the scaling as well. Johnson combines a cluster analysis with MDS to show how various beers are perceived and how they compare with the clustered respondents' ideal points. Factor analysis and discriminant analysis have also been used with MDS.

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Green and Tull provide several examples of prior uses of MDS. These include the development of soft drink slogans (similarity between slogan and brand), computer firm images (among users and nonusers), high nutrition cereals, and magazine positioning. In these studies the impact of MDS results on advertising messages can be clearly seen.

MDS can be used in other areas of marketing research as well. Three of these are market segmentation, product positioning, and new product development. Green and Tull suggest that MDS's application to market segmentation can be accomplished by saying that a segment in a MDS study would represent a group of respondents who would have similar ideal points based on the dimensions studied. Johnson's previously cited study from the beer market is an example of this type of segmentation. Being able to describe differences in the clusters demographically would increase the value of the segmentation. Market opportunities would exist where a large cluster of ideal points is not near any current brands. Such a study could possibly be done using various cigarette brands.

MDS can also be used in new product development although conjoint analysis and benefit segmentation are probably better techniques to use. Basically the users of MDS for this purpose try to predict how new products will be accepted based on their position in an already determined perceptual space. This really is not that different from what would normally be called product positioning but Green and Tull choose to make the distinction. Pessemier and Root (1973) use a form of MDS in what they call new product planning.

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Urban and Hauser (1980) devote a chapter (19) to perceptual mapping in the context of new and existing products. This seems to be one of the best areas

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for systematic use of MDS. Perceptions of brand positions could be tracked over time as they may migrate depending on ad campaigns and new product offerings. Urban and Hauser also discuss using factor analysis with MDS as well as actually producing a map. Positioning a new product is said to be similar to positioning current products except that consumer reactions and perceptions are based on a concept statement or samples of the product. These authors also present some interesting ways of graphically showing the results of a perceptual map (such as "snake diagrams"). Similarity scaling is also utilized by Urban and Hauser in their perceptual mapping work.

The difference between metric and nonmetric scaling may be difficult to grasp, especially from the definition previously given in this paper. In fact, in many cases the results of metric and nonmetric scaling are found to approximate each other (G&T p.467). Myers and Tauber provide a listing of the advantages and disadvantages of nonmetric scaling which may help to improve clarity. Some of the advantages include the following: ranking of items in terms of preference or similarity is believed to be easier for respondents than having to estimate the amount of difference in the pairs; current computer models can a provide a close approximation of the magnitude of these differences from ordinal data; nonmetric studies do not specify criteria in advance, only similarity differences are used. The final map may closely match the original data. Metric data can be used in nonmetric systems by converting similarity ratings into ranks. Different segments can be determined by grouping respondents based on the degree of similarity they perceive in competitive products; these segments can then be mapped separately if this is necessary.

Nonmetric scaling is found to have some problems as well. Respondents may not be able to rank large numbers of comparisons (10 brands would have 45 two-at-a-time combinations). The ease of collecting similarity data may keep the

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researcher from looking at the real problems of the study. No indication is made as to how different each ranked object is from the next one (is the difference between cigarettes ranked 1 and 2 the same as between cigarettes ranked 7 and 8?). Some respondents may simply not have the capability to handle the ranking procedure even with one-on-one coaching. More objects are required in nonmetric scaling to get equivalently dimensional maps than in metric scaling. One may have a group of objects that are so different that the value of mapping is diminished (p.36-8). In some studies, where perceived differences are complex, the ability of a panelist to reproduce an MDS map may be difficult. Where possible, MDS studies should be conducted more than once with the same panelists to check reproducibility.

Several additional articles have been written about MDS, metric and nonmetric, as well as perceptual mapping and the use of other analytical techniques with them. These include Neidell (1969), Darden and Reynolds (1974), Green, Wind, and Claycamp (1975), Green (January 1975), Green (February 1975), Hauser and Koppelman (1979), Pessemier (1979), Johnson (1980), Hauser and Simmie (1981), and Dillon, Frederick, and Tangpanichdee (1982).

Multidimensional scaling appears to have applications in studying the cigarette market. Similarities among brands can be investigated and the maps created would be useful in new product positioning or current product repositioning. MDS has been used extensively in PED. Nonmetric MDS has been used in perceptual segmentation of cigarette brand names, in determining interval distances between phrases in the nine-point hedonic scale, in obtaining the sensory dimensions of cigarette blends to obtain sensory/analytical correlations, in mapping perceived differences in odorants (alkanes, pyrazines, and pyridines) to develop structure-activity models, and in comparing the side-stream quality of

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commercial cigarette brands. In house reports include Accession Nos. 76-124, 80-048, and 81-142.

MDS studies, especially when combined with a cluster analysis of respondents, looks promising for cigarette segmentation. Cigarette attributes could also be added to a mapping study to see which brands are perceived as closest to these attributes. By doing this, opportunities for new products could become more apparent.

Conjoint Analysis

Conjoint analysis is an analytical technique which has been used extensively in marketing. Most conjoint studies have involved new product design, i.e. what features, given price considerations, should be included in a new product or brand offering? Attempts have been made to expand the uses of conjoint analysis and this may be seen directly in POSSE and componential segmentation. Each inject a segmentation feature into the conjoint framework. Dr. Paul Green has done much of the work in this area and his articles will be cited throughout this section.

Urban and Hauser (1980) view conjoint analysis as a natural extension of perceptual mapping. They see it as the new product design step after the mapping has shown a possible position for a new product. Conjoint analysis is viewed as an intermediate design process which can link features to overall product preference or perception. According to these authors, its primary usefulness is in designing physical features into a product. It has been used in other areas, however, such as developing services for banks and transportation companies. The process has also been used in such diverse areas

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as industrial goods, consumer nondurables, and medical laboratories. Cattin and Wittink (1982) estimate that about 1000 commercial conjoint projects have been conducted during the last ten years.

The initial goals of conjoint analysis agree with Urban and Hauser's use of the technique. Green and Wind (1975) saw the following uses for conjoint analysis: new product formulation, package design, brand name determination, pricing and brand alternatives, and alternative service designs. As one can tell, each of these is related to the product/service itself. Later studies do go beyond this as will be seen in the following paragraphs.

Conjoint analysis is similar to MDS in that consumer preferences or perceptions are measured. According to Green and Tull one of the main differences between the two methods is that in conjoint analysis "...the stimuli are designed beforehand according to some type of factorial structure." (p.477) The respondent is asked to rank items in order of preference or desirability (in MDS it was by degree of similarity). Basically, respondents look at prototypes or descriptions of a product in which one or more features are systematically altered. The respondents rank each prototype in order of desirability. Estimates of the utility of each feature are made from the respondents' evaluation of each prototype. For example, a person is shown two cars identical except that Car A costs $7000 and gets 25 mpg while Car B costs $6800 and gets 23 mpg. If the respondent prefers Car A to B, we can infer that he is willing to pay at least $200 for the added fuel economy. If he chooses Car A over Car C ($7000, 23 mpg, metallic paint), we can say he has a higher utility for fuel economy than metallic paint. (Utility is a measure of the inner value a person places on some feature or product. Goods/features with high utility to a consumer are preferred over those with low utility by that consumer. Consumers

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are believed to subconsciously try to maximize utility based on their financial constraints.)

There are two main ways of gathering information from respondents for a conjoint study. The first way is to rate the features being considered two-at-a-time. If three levels of each feature are being measured, the pairs of features rated would be on a 3x3 matrix. The respondent would be shown a matrix with the sides defined as the levels of the features being paired, e.g. miles per gallon and 0-50 acceleration time. The respondent would fill in the matrix based on the combination most preferred to least preferred (1 through 9). Any number of levels could be considered although more than four would probably become too complicated for the respondent. While this ranking is easy to do, for many features it can become boring. Utilities are derived from the part-worths gathered from the respondents.

The second method involves evaluating all of the features at once in some pre-arranged combination. It takes less time for the respondent to analyze and presents more of a real world trade-off situation. However, it also requires a face-to-face interview between researcher and respondent. Orthogonal arrays are used to create the feature combinations. This technique is a fractional factorial design that allows one to estimate all of the main effects of the features with the smallest number of combinations. Usually the number of feature combinations needed can be greatly reduced. Green (September 1974) describes in greater detail the use of orthogonal arrays and incomplete block designs as means of reducing the number of feature combinations needed. After the possible choices have been reduced and balanced, the feature combinations are placed on cards. Descriptions and pictures may be included on the cards in an attempt to highlight the feature differences. The respondent ranks these

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cards based on his own preference for the described product. Protoypes may also be used if they are available to further illustrate the differences in the feature levels. While the respondent must think more in ranking his preferences, it is the type of multi-feature evaluation which occurs when comparing products in everyday life. Commercial conjoint studies tend to use this procedure.

Monotonic analysis of variance (MONANOVA) is used when analyzing multifactor conjoint data. Green and Tull describe the process as well as give results of a typical MONANOVA analysis (p.481-6).

Myers and Tauber also establish a link between conjoint analysis and MDS with conjoint analysis being the next step in the overall product development process. They list several advantages and limitations of conjoint analysis which will be discussed below. The trade-off analysis inherent in the conjoint process indicates which features are more important to the consumer. This importance can be expressed quantitatively. It is the best method for drawing inferences for a final product. An estimate of market share can even be derived from the data. The disadvantages include possible over-loading of the respondents to the point that they make any choice just to get through the process. Some features are hard to establish levels which will not be semantically confusing. Several products are not appropriate for conjoint studies such as those where little thought goes into the purchase (cigarettes?), low risk products (and usually low cost), and where manipulation of the features may not be possible. Finally management must be sure to pick the correct features to be included in the conjoint study. Focus groups can help to determine the correct features to include.

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Componential Segmentation

As mentioned earlier, two extensions of conjoint analysis, componential segmentation and product optimization and selected segment evaluation (POSSE), should also be discussed. Green (1977) and Green and DeSarbo (1979) cover componential segmentation. This process attempts to measure the effect of situation variables and respondent characteristics in conjunction with product attributes in influencing a respondent's preferences. This segmentation technique is held to be neither a priori or post hoc--rather it focuses on these interactive effects in conjunction with consumer preferences. Componential segmentation attempts to predict which product a consumer would choose (from a set of several possibilities) based on a multi-attribute profile of both consumer and product.

A componential segment is not a segment of people or a segment of products. It is a combination of person and product which creates this type of segment. An entire market may not be segmentable in this manner. These segments may have different types of people or products in them--but the interactions will be the same. Green and DeSarbo describe a model called COSEG-II which can be used for this type of research. A study of an application of the model illustrates its extension of the conjoint analysis concept. Segments which can be described demographically are identified and their interactions with certain product features can be determined.

Green and DeSarbo make the following claims of componential segmentation. It can test statistically to see if a market (by their definition) can be segmented. The model can provide more detailed information than other

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segmentation schemes. The model can estimate part-worths on incomplete sets of data and can be applied to new consumers either individually or as a group. Finally, the model can be used with other forms of segmentation, a priori or post hoc, of person or situation variables.

POSSE

POSSE is a further enhancement of the conjoint analysis concept. It not only attempts to determine what is the best combination of feature/price in a product, but also the segment of consumers that this product should be targeted towards. Green, Carroll, and Goldberg (1981) describe the technique in detail. They make a distinction between traditional and optimal based conjoint studies. Traditional conjoint studies are those which basically take several product configurations, selected a priori, and see how each would do in a simulated choice environment. In POSSE the attempt is to relate control variables, such as product features, to such things as market share and sales. By gathering the correct information from consumers, these same relationships can also be done for segments of customers. Ideally POSSE can tell the identity of a group of people who want a specific product, which it can also describe, as well as the potential market share of the new product.

The overall methodology is quite complicated. Twenty-eight different computer programs make up the POSSE system. Green, Carroll, and Goldberg describe a pilot application of the technique which makes its use clearer. One of the highlights of POSSE is its flexibility. For instance, after the information is gathered, one feature could be fixed at a level and the ideal product could be developed around this constraint. The best target market is the group of

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consumers who prefenred the "product" that turns out to be the optimal one. Their "background" characteristics can be identified by one of the programs in POSSE. Supposedly one could also look at the people who chose the the optimal as number one or two (if neither is currently available). As has been mentioned before, the attempt is not to segment the entire market, only to identify a segment which will be more likely to buy your product over others.

Some problems are found with POSSE and these can be extended to traditional conjoint analysis as well. Both are heavily dependent on consumer data which is increasingly expensive to obtain. Hybrid models of conjoint analysis attempt to reduce this by estimating parameters at different levels (Green, 1983 working paper and Green, Goldberg, and Montemayor, 1981). The stability of the algorithms needs further testing. Currently POSSE has no capability for trend analysis. Validity testing of the system needs to be done. A final concern, and one which Green does not mention, is the fact that some products have features that go beyond the products themselves, something that cannot be duplicated by another firm. A strong brand or company name immediately comes to mind. Consumers may be willing to rank various options to get an optimal product, say for a rifle, but what they may not reveal is that a gun can have all of those features, but if it is not a Winchester, they will not buy it.

Given the widespread use of conjoint analysis and its extensions, one might expect that several articles would have been written on the subject. Sands and Warwick (1981) provide a good example of conjoint measurement of clock radios. Green and Srinivasan (1978) have written a very good article on conjoint analysis's development and outlook. The Cattin and Wittink (1982) article deals

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with a survey of current users of the technique. Tashchian, Tashchian, and Slama (1981) studied quality of response in conjoint studies. Some early articles on the topic include Green and Rao (1971), Green, Wind, and Jain (1972), Wind (1973), who combines MDS and conjoint measurement, and Green and Wind (1975). Some of the more technical articles include Pekelman and Sen (March and May 1979), Acito and Jain (1980), Malhorta (1982), Cattin, Gelfand, and Danes (1983), and Akaah and Korgaonkar (1983).

Final Comments on Conjoint Analysis

Conjoint analysis has advanced beyond its original uses as a product design tool. Its use as an identifier of target segments as well as a product optimizer will probably grow in the future. This will be especially so as the POSSE system is improved and other models are introduced. The method would seem to have applications in the cigarette market although more thought will have to go into the design of the product features data gathering part of any study. The concern here would be that cigarettes may not have enough clearly stated features for a conjoint model to be constructed and that these features may be non-quantifiable, thus making it difficult to obtain levels for the design variables. Other techniques, such as response surface designs, may be actually superior for product optimization, although research should be conducted using conjoint analysis and a variety of optimization techniques to validate or eliminate these concerns.

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OTHER MARKETING MODELS OF INTEREST

In searching the literature on market segmentation and product positioning, several additional models and techniques were discovered. These will be grouped into two classifications: segmentation models and new product development/test market sales models. Some of these will be reviewed, others will only be mentioned with sources given for additional research.

Segmentation Models

Several articles dealing with various aspects of market segmentation were uncovered. Green and Carmone (1977) discuss a technique called Segment Congruence Analysis. The technique uses multidimensional contingency table analysis to determine the best set of variables to use in a segmentation project. Different sets of variables are evaluated in a stepwise fashion and one can use this to see if additional variables increase predictive capabilities. Green, Carmone, and Wachpress (1976) describe an algorithm called CANDECOMP (for canonical decomposition) which uses latent class analysis as a segmentation tool. Latent class analysis is a data unmixing procedure in which it is assumed that variables exhibit local independence. Green, Wind, and Jain (1973) use reduced space and clustering procedures similar to multidimensional scaling to analyze free-response data. The technique can possibly be used to create benefit segments based on the clustering of responses.

McCrohan (1980) describes an example of segmentation based on Reisman's theory of inner-other-directed social character. Inner-other-directedness has been related to consumer behavior and could be a possible variable for cigarette segmentation, given the image-based nature of cigarette marketing. Blattberg

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and Sen (1974) discuss a scheme which segments markets based on multidimensional purchasing behavior. Segments are divided into price and nonprice groupings. If price competition becomes a characteristic of the cigarette market (to date it has not but there are indications that this may be changing), this segmentation method could be useful. Elrod and Winer (1982) test criteria for the creation of market segments. They find that the most profitable means of creating segments is to base them on customers' optimal level of response to marketing variables.

New Product Development/Test Market Sales Models

Discussion of the various new product development models and sales forecasting models could be the subject of an entirely separate report. The number of models which attempt to enhance new product development or predict how the sales of a product will increase based on other information abound in the literature. Many models probably exist which have yet to find their way into some published work. At this stage of thinking at R&D--to develop segmentation methods and "technology push"-based product development avenues--it is not of vital importance to know the mechanics of each of these models. Ongoing research could be conducted in this area to keep abreast of developments by periodically reviewing the marketing literature and by contacting private marketing consulting companies. Detailed investigation of specific models can be conducted as the Department's needs concerning models for technology push based new products are more clearly defined. The models reviewed so far will be briefly discussed below.

Narasimhan and Sen (1983) have written a very good article evaluating several models which use test market data to evaluate the performance of a new brand.

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Most of the articles which originally presented these models are also listed in the annotated bibliography. The models covered in this article are those which evaluate test market results. Basically the models attempt to do one or both of the following things: predict sales or measure the impact of various marketing mix variables. These models also concentrate on consumer nondurables as opposed to more ranely purchased durable goods. All of the models are concerned with consumer trial and repeat purchases of a product, some address consumer awareness as well.

Narasimhan and Sen identify three models which are judged superior in their ability to predict as well as ease of use and cost. They are the Parfitt/ Collins model, TRACKER, and NEWS (New Product Early Warning System). Each is covered in detail in an appendix. This is especially useful for the NEWS model where the originall article (Pringle, Wilson, and Brody, 1982) could not be located. The advertising agency, BBDO, can also be contacted for information on NEWS. Parfitt and Collins (1968) describe their model in detail. Its objective is to predict market share of a new brand both after it is launched and after equilibrium has been reached. The model is easy to use and has been used repeatedly over the years. Blattberg and Golanty (1978) discuss the TRACKER model. It uses survey data to predict year-end test market sales from early test market results. TRACKER can also be used in product planning prior to test market introduction by adjusting price and advertising variables.

Some other models covered in Narasimhan and Sen include STEAM, SPRINTER, and NEWPROD. Massy (1969) introduced STEAM, stochastic evolutionary adoption model, as a means of predicting test market sales from panel data. It is a complex model which does not consider the use of various marketing mix variables. Urban (1970) describes the SPRINTER model. It has three versions (Mod I, Mod II, and

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Mod III) with customizing capabilities in each. While the model does a good job of covering the adoption process, it is complex and requires a large amount of data. Assmus (1975) covers the development and use of NEWPROD (new product) model. The model uses marketing variables in the prediction of market share. The model has not found widespread use, partially because relative price is not considered in the model. Repeat on repeat purchase is also ignored. Two other models covered by Narasimhan and Sen are Eskin (1973) and Nakanishii (1973). The former is concerned with level of repeat purchase as a predictor of demand, while the latter looks at the long-term effects of advertising and promotion on demand.

Three other new product models were also found in the literature: ASSESSOR, PERCEPTOR, and the AYER new product model. Silk and Urban (1978) present ASSESSOR as a model designed to improve pre-test market evaluation of consumer packaged goods. The goal is to reduce the number of products which fail once they get into test market, an expensive time to have to make a NO GO decision on a product. ASSESSOR predicts long-run market share and cannabalization levels, provides product improvement information, and allows for testing of alternate marketing plans. This model might be of use to PED in "technology push" product development since it is used earlier in the development process than the previously discussed models.

Urban (1975) discussed PERCEPTOR, a model which is used in designing consumer products. The model estimates the long-run market share of various new product concepts. Perceptual maps of existing brands are created along with ideal new product positionings. The distance in the perceptual space of the proposed new brand from the ideal point indicates the probability of purchase. PERCEPTOR can also be used to reposition or redesign mature products. Claycamp and Liddy

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(1969) describe the AYER model which predicts trial and repeat purchases as a function of various marketing variables. No other uses of this model have been found in the marketing literature.

Several other articles have been published which are related to purchase behavior and prediction although they do not describe computer based models. Kraft, Granbois, and Summers (1973) discuss the use of a "summated index" of prior brand purchases in predicting brand purchase. Ostlund (1972) predicted new buyers based on perceptual variables as they related to the new product. Huber (1975) looked at various models' ability to predict individual preferences for bundles of attributes. The models included the naive model, the additive model, and the weighted-additive model. These are generic, psychological models. Ehrenberg (1971) stated that new brand performance could be predicted based on an understanding of brand loyalty and buyer behavior in the market. He describes how to get this information. Blattberg, Buesing, and Sen (1980) look at how the introduction of a new product affected a stable market. They find that brand-loyal as well as brand-switching consumers may adopt a new product. This has implications for proper brand targeting.

Mazis, et al. (1975) compare four models which predict consumer attitudes. Woodside and Clokey (1974) find that prediction of brand choice improves when one includes the attitudes toward other brands. They refer to brands similar to each other such as brands of beer or brands of detergent. The theory could be extended to include attitudes toward other products as well. For example, the probability of buying a Miller could be associated with attitudes toward salty snacks, sports magazines and hard liquors. Wilkie and Pessemier (1973) discuss

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the use of multiattribute models in marketing. Many previous studies are compared. Jones and Zufryden (1980) describe a fairly technical purchase behavior model which was able to use demographics to predict consumer choice. Pessemier and Root (1973) discuss the entire new product planning process from searching for ideas to an analysis of investment requirements. Shocker and Srinivasan (1979) discuss multiattribute methods of generating product concepts and their evaluation.

These articles may be important in understanding the consumer purchasing process. This understanding is important to those researchers at Philip Morris who are (or will be) involved in "technology push" product development activities and who do not have formal marketing training.

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CONCLUSIONS

As was stated at the start if this paper, several areas have been covered. An attempt has been made to make the reader familiar with the many ways that markets can be segmented. The nature of the segments was also considered, including the fact that they are not static, but are constantly changing as the markets themselves change. The increasing price consciousness of the cigarette market is an indication of this change. The tools that are used in segmenting markets were also discussed, although not in overly technical terms. Finally, additional modeling techniques were illustrated; these will be particularly useful as we think more about "technology push" development.

Certainly many things can be investigated in this type of research. In segmentation research the important thing is to remain creative. Many different ways to segment a market, including the cigarette market, can exist. One must be willing to investigate any relationship which shows promise. This paper has hopefully pointed the reader in the right direction regarding market segmentation, methods of measurement, and how these concepts can be used in a "technology push" environment at PED. The attached bibliography will also allow the more interested reader to conduct additional segmentation research.

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Aaker, D.A., and J.G. Shansby, "Positioning Your Product," BUSINESS HORIZONS, 25, (May/June 1982) pp. 56-62.

A discussion of the many definitions of positioning is given. Six different positioning strategies are presented and explained. They are positioning by attribute, price/quality, use or application, product user, product class, and with respect to competition. Developing a positioning strategy is described as a six step process involving competitor and customer analysis as well as position selection and monitoring.

Acito, F. and A.K. Jain, "Evaluation of Conjoint Analysis Results: A Comparison of Methods," JOURNAL OF MARKETING RESEARCH, 17, (February 1980) pp. 106-112.

Three methods of evaluating conjoint analysis results are described and compared. Each method is applied to a data set derived from a health care study. The three methods were 1) internal estimate of badness of fit, 2) part-worth utility function, and 3) predictability of the rank of holdout profiles. The third method is found to be the best for general inferences about the overall quality of the data.

Agarwal, M.K. and B.T. Ratchford, "A Comparison of Alternative Approaches to Forecasting Brand Choice," in MARKET MEASUREMENT AND ANALYSIS, Montgomery and Wittink, (eds.) 1979, pp. 355-377.

Four methods are compared which attempt to estimate the relationship between probability of choosing a brand and brand attributes. Each model involves utility or preference functions usually compared with a logit analysis. The models give better results at the individual level, the other two at the group level. Each model used the same data from an automobile study.

Agostini, J.M. "New Criteria for Classifying Informants in Market Research and Media Strategy," ADMAP, 3, (1967).

Akaah, Ishmael, P. and Pradeep K. Korgaonkar, "An Empirical Comparison of Predictive Validity of Self-Explicated, Huber-Hybrid, Traditional Conjoint, and Hybrid Conjoint Models," JOURNAL OF MARKETING RESEARCH, 20, (May 1983) pp. 187-97.

A technical article which looks at various conjoint models. Three different modeling approaches are described. Traditional and hybrid conjoint models are found to be better than the other methods. A study, which was used to compare the various models, is described. A good bibliography concludes the article.

Albers, S., "An Extended Algorithm for Optimal Product Positioning" EUROPEAN JOURNAL OF OPERATIONS RESEARCH, 3, (1979) pp. 222-231.

Albers, S. and K. Brockhoff, "A Procedure for New Product Positioning in an Attribute Space," EUROPEAN JOURNAL OF OPERATIONS RESEARCH 1, (1977) pp. 230-238.

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Albers, S. and K. Brockhoff, "Optimal Product Attributes in Single Choice Models," JOURNAL OF THE OPERATIONAL RESEARCH SOCIETY, 31, (July 1980) pp. 647-655.

Alpert, M.I., "Personality and the Determinants of Product Choice," JOURNAL OF MARKETING RESEARCH, 9, (February 1972) pp. 89-92.

Canonical analysis is used in a study of personality as a determinant in market segmentation. A study is briefly described which attempts to measure the degree to which personality traits are related to product chioce. Marketing strategy implications are also mentioned. As in many studies of this type, a standard psychological test is used to measure personality.

Alpert, M.I. and Robert Peterson, "On the Interpretation of Canonical Analysis," JOURNAL OF MARKETING RESEARCH, 9, (May 1972) pp. 187-192.

Canonical analysis was found to be a "highly useful and powerful" technique in explaining the relationships between variables. Several suggestions are given for improving the interpretation of data gathered by this method. The report is fairly technical, particluarly in the areas of proper interpretation. A study is described which illustrates several of the points made in the article. A good bibliography concludes the article.

Arabie, P., J.D. Carroll, W. DeSarbo, and Y. Wind,"Overlapping Clustering: A New Methodology for Product Positioning," JOURNAL OF MARKETING RESEARCH, 18, (1981) pp. 310-317.

Previous cluster analysis research attempts to divide a market into mutually exclusive clusters. In this article ADLCLUS is described. This model allows one to conduct marketing studies in which products/ subjects can be included in more than one cluster simultaneously. The MARCLUS algorithm is also described and its use with ADCLUS is illustrated by applying the model to a study of breakfast food items.

Assael, H., "Segmenting Markets by Group Purchasing Behavior: An Application of the A.I.D. Technique," JOURNAL OF MARKETING RESEARCH, 7, (May 1970) pp. 153-159.

An example of the Automatic Interaction Detector is presented. The operation of the program is described and its advantagesover other multivariate methods are also covered. A study is described which shows how the program works and its ease in graphical presentation. Limitations of the method are also broughtout including the realization that on dichotomous splits, allfurther splits are contingent on the first one, and the independence of variables is not considered. The program can be usedfor socioeconomic as well as attitudinal segmentation.

Assael, H. and J. Keon, "Nonsampling vs. Sampling Errors in Survey Research," JOURNAL OF MARKETING, 46, (Spring 1982) pp. 114-123.

Assael, H. and A.M. Roscoe, Jr., "Approaches to Market Segmentation Analysis," JOURNAL OF MARKETING, 40, (October 1976) pp. 67-76.

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Market segmentation is not one approach but several approaches to marketing objectives. The segmentation can be based on two criteria: 1) Behavior criterion at a point in time or over time, 2) Multiple behavior criterion. A four cell model of typical segmentation studies is presented. A segmentation study conducted by AT & T using AID is given. A canonical correlation analysis is also done on the data. Gives good examples of the type of results available from AID and canonical analysis.

Assmus, Gert, "NEWPROD: The Design and Implementation of a New Product Model," JOURNAL OF MARKETING, 39, (January 1975) pp. 16-23.

Conditions are laid out which affect a company's inclination toward adopting a new product model. Early stage models, those applied to "newer" products, are found to be more acceptable than older stage models. The NEWPROD model is described and meets the criteria set up by the author. Consumers are grouped as being aware and unaware of the product and are then tracked over time. Examples of the model's predictive power are also given.

Bachem, A. and H. Simon, "Optimal Product Positioning in an Attribute Space," University of Bonn working paper (1977) Bonn, Germany.

Bagozzi, R.P. CAUSAL MODELS IN MARKETING. New York: John Wiley and Sons, Inc., (1980).

Barnett, N.L., "Beyond Market Segmentation," HARVARD BUSINESS REVIEW, (Jan-Feb 1969) pp. 152-166.

A fairly general article which reviews current market segmentation research and then introduces product segmentation as a possible advancement in the field. Product segmentation is concerned with consumer's perceptions of products as opposed to consumer characteristics in a general market. The concept is held to be especially applicable to new product development.

Bass, Frank M., "Analytical Approaches in the Study of Purchase Behavior and Brand Choice," in Robert Ferber, ed., SELECTED ASPECTS OF CONSUMER BEHAVIOR., Washington D.C.: National Science Foundation (1977) pp. 491-514.

Bass, Frank M., E.A. Pessemier, and Donald R. Lehmann, "An Experimental Study of Relationships Between Attitudes, Brand Preference, and Choice," BEHAVIORIAL SCIENCE, 17, (November 1972) pp. 532-41.

The authors measure the effectiveness of models of preference and choice based on specific product attributes. A study of soft drinks is described and the various models are applied to the data. The authors draw on Fishbein's work on attitude theory to a large extent. The authors find that measures of stated preference do provide significant predictions of choice behavior.

Bass, Frank M., E.A. Pessemier, and D.J. Tigert, "Complementary and Substitute Patterns of Purchasing and Use," JOURNAL OF ADVERTISING RESEARCH, 9, no. 2, (1969) pp. 19-28.

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An older article which attempts to identify complementary and substitute patterns of purchasing and use through factor analysis. A key question was to identify factors that were associated with individual product's usage rates. This is an article which may have some meaning in the brand clustering area.

Bass, Frank M. and W.W. Talarzyk, "An Attitude Model for the Study of Brand Preference," JOURNAL OF MARKETING RESEARCH, 9, (February 1972) pp. 93-96.

The authors find that brand preference is related to attitude measurements based upon beliefs about product-specific attributes and the relative importance of these attributes. Previous studies on the topic are briefly reviewed and the findings of the study are presented in some detail. A variation of the Fishbein model was used.

Bass, Frank M. and W.W. Talarzyk, "A Study of Attitude Theory and Brand Preference," in MARKETING'S INVOLVEMENT IN SOCIETY AND THE ECONOMY, Proceedings of the American Marketing Association, (August 1969) pp. 272-279.

Bass, Frank M. and W.W. Talarzyk, "Using Attitude to Predict Individual Brand Preference," OCCASIONAL PAPERS IN ADVERTISING, 4, (May 1971) pp. 63-72.

Bass, Frank M., D.J. Tigert, and Ronald T. Lonsdale, "Market Segmentation: Group vs. Individual Behavior," JOURNAL OF MARKETING RESEARCH, 5, (August 1968) pp. 264-70.

The authors assert that market segments can be created and described using socio-economic variables. A theoretical framework for segmentation measurement in terms of group behavior is developed. A study is described which divides a market into heavy and light users.

Bass, Frank M. and William L. Wilkie, "A Comparative Analysis of Attitudinal Predictions of Brand Preference," JOURNAL OF MARKETING RESEARCH, 10, (August 1973) pp. 262-69.

Various attitude models and methods of analysis are compared. The use of importance weights is discussed as are the differences between cross-sectional and individual-level analysis methods.

Beazley, D., "Alternative Approaches to Brand Positioning Research: How Do We Choose ?" in Green, P.E. and Christopher, M. eds., BRAND POSITIONING, Cranfield Institute of Technology, UK, 1973.

Beckwith, N.E. and M.W. Sasieni, "Criteria for Market Segmentation Studies," MANAGEMENT SCIENCE, 22, (April 1976) pp. 892-903.

Bernstein, Peter W., "Psychographics Is Still an Issue on Madison Avenue," FORTUNE, 97, (January 16, 1978) pp. 78-84.

Bernstein looks at how several products are sold utilizing a psychographic message. Several people/firms who were using psychographics in 1978 are mentioned. This is useful if PED wishes to contact these people. Some of the difficulties in creating advertising from psychographics is also mentioned. This is a fairly general article yet useful to the reader interested in psychographics.

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Bishop, Yvonne, Stephen Feinberg, and Paul Holland, DISCRETE MULTIVARIATE ANALYSIS. Cambridge, Mass: The MIT Press, 1975.

Blattberg, R.C., Thomas Buesing, and Subrata K. Sen, "Segmentation Strategies for New National Brands," JOURNAL OF MARKETING, 44, (Fall 1980) pp. 59-67.

The authors discuss a method for analyzing the effect of a new brand introduction of a frequently purchased, inexpensive product. Market segments are determined a priori from consumer panel data and the effect of the new introduction is observed on the purchase patterns of these consumer segments. The authors assert that new brands should not be targeted only toward brand switchers since brand loyal people may change as well due to other changes in the market.

Blattberg, R.C. and John Golanty, "Tracker: An Early Test Market Forecasting and Diagnostic Model for New Product Planning," JOURNAL OF MARKETING RESEARCH, 15, (May 1978) pp. 192-202.

A relatively low cost product forcasting model is described in detail. It uses survey data as opposed to panel data to predict sales of a product about nine months in advance. In addition, the model provides guidance in reformulating the marketing mix of products not meeting interim sales tangets. Some results of the model are given for validation purposes.

Blattberg, R.C., Peter Peacock, and Subrata K. Sen, "Purchasing Strategies Across Product Categories," JOURNAL OF CONSUMER RESEARCH, 3, (December 1976) pp. 143-54.

The article investigates the degree to which consumers use certain strategies in making purchase decisions across product categories. Consumers are found to frequently use identical or similar purchasing strategies and it is implied that general household characteristics such as demographics may have a larger than expected impact on consumer buying behavior. An empirical study is used to substantiate these findings.

Blattberg, R.C. and Subrata K. Sen, "Market Segmentation Using Models of Multidimensional Purchasing Behavior," JOURNAL OF MARKETING, 38, (October 1974) pp. 17-28.

A literature review of market segmentation leads into a detailed description of model which goes beyond current segmentation schemes. Previous segmentation methods are grouped into five areas. The new model, as explained in an empirical study, involves looking at purchase behavior along several dimensions. Several segments are derived based on price/nonprice considerations. A Bayesian model (BDIS) is used to place consumers into the segments. Strategic implications of the model are also discussed.

Blattberg, R.C. and Subrata K. Sen, "Market Segments and Stochastic Brand Choice Models," JOURNAL OF MARKETING RESEARCH, 13, (February 1976) pp. 34-45.

The use of a single stochastic brand choice model is discussed given the existence of several market segments which can be derived from panel data. Prior research in the area is discussed and it is determined that several models should be used while allowing consumers within a segment to have different model parameters. Failure to do this may result in the inability to recognize the degree of heterogeneity in the market.

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Boote, Alfred S., "Market Segmentation by Personal Values and Salient Product Attributes," JOURNAL OF ADVERTISING RESEARCH, 21, (February 1981) pp. 29-35,

A family restaurant chain study is described which uses personal values as the main criteria for market segmentation. Boote states that market segmentation objectives are to reduce risk and increase marketing efficiency. Values are different from attitudes in that values are more general and guide behavior while attitudes are object specific. The segments were broken down by sex since values can be different between males and females.

Boote, Alfred S., "Psychographic Segmentation in Europe," JOURNAL OF ADVERTISING RESEARCH, 22, (Dec. 1982/Jan. 1983) pp 19-26.

Foreign psychographic segmentation is investigated in an attempt to justify international advertising. The article reports the results of a study of comparative values of women who own major household appliances and live in Europe. Segments are described and are found to exist across all three countries studied. Underlying value structures were found to be similar.

Buckle, M. and Hughes-Hallet, A., "Getting the Best Out of Brand Image Work," Proceedings of ESOMAR Annual Conference, 1975.

Butler, Jr., B.F., "The Next Brand Into the Market," SPEAKING OF HENDRY, Croton-on-Hudson, New York: The Hendry Corporation, (1976) pp. 50-61.

Calantone, Roger J. and Alan G. Sawyer, "The Stability of Benefit Segments," JOURNAL OF MARKETING RESEARCH, 15, (August 1978) pp. 395-404.

The article is concerned with the stability of benefit segments over time. Past research of market segments from a dynamic perspective is described. A study is presented in which benefit segments based on product attributes are found to be fairly stable over a period of two years. However, when individual households were studied, a higher level of segment switching was noted. The implications of these findings are discussed. A good bibliography concludes the article.

Carroll, J.D. and J.J. Chang, "Analysis of Individual Differences in Multidimensional Scaling Via an N-Way Generalization of Eckart-Young Decomposition," PSYCHOMETRICA, 35, (1970) pp. 283-319.

Carroll, J.D. and J.J. Chang, "How to Use INDSCAL, A Computer Program for Canonical Decomposition of N-Way Tables and Individual Differences in Multidimensional Scaling," Bell Laboratories, Murray Hill, N.J. (1969).

Cattin, Philippe, A.E. Gelfand, and J. Danes, "A Simple Bayesian Procedure for Estimation in a Conjoint Model," JOURNAL OF MARKETING RESEARCH, 20, (February 1983) pp. 29-35.

A technical article in which the authors propose a simple Bayesian approach for estimating individual-level conjoint models. Impro-vement in estimation and prediction is seen over ordinary least squares for typical conjoint data. An initial empirical study confirms the improvement. Data requirements are not reduced by this procedure.

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Cattin, Phillipe and Dick R. Wittink, "Commercial Use of Conjoint Analysis: A Survey," JOURNAL OF MARKETING, 46, (Summer 1982) pp. 44-53.

A good article covering the status of conjoint analysis as a tool for product design and evaluation as well as for market segmentation. The authors discuss the results of a survey of commercial users of conjoint analysis. Of the respondents, 48% stated that market segmentation was a goal of their research. A good bibliography is given at the end of the article.

Christopher, M.A., "A Cluster Analysis of Towns in England and Wales According to Their Suitability for Test MArket Locations," University of Bradford Research Project Series in Marketing, 1969.

Claycamp, H. and L.E. Liddy, "Prediction of New Product Performance: An Analytical Approach," JOURNAL OF MARKETING RESEARCH, 6, (November 1969), pp. 414-420.

One of the earliest articles which attempts to predict product performance prior to market introduction. Information was obtained from consumer panels approximately 13 weeks after product introduction. While current sales were predicted with fair accuracy based on the data given, the ability to predict future sales levels was not addressed. More recent articles are devoted to this issue.

Cooper, John C.B., "Factor Analysis: An Overview," THE AMERICAN STATISTICIAN, 37, (May 1983) pp. 141-147.

As the title states, this is a somewhat technical article which describes factor analysis. The underlying theory is described and then an empirical study in marketing is covered to illustrate the technique. Various rotations are covered and the technique is compared to regression analysis. Classical factor analysis and principal component analysis are also discussed.

Cunningham, W.H. and Willian Crissy, "Market Segmentation By Motivation and Attitude," JOURNAL OF MARKETING RESEARCH, 9, (February 1972) pp. 100-102.

Short article dealing with an attempt to segment the American compact car market based on demographic, socioeconomic, and attitudinal measures. The study is decribed in some detail. Inverse factor analysis was used with some success for the motivational and attitudinal information. The compact car market was found to be really two markets; one for American cars and one for foreign cars.

Currim, Imran S., "Using Segmentation Approaches for Better Prediction and Understanding from Consumer Mode Choice Models," JOURNAL OF MARKETING RESEARCH, 18, (August 1981) pp. 301-09.

The LOGIT model is used in a study of transportation modes in the San Francisco Bay area. The discussion of the study is fairly technical in nature. The two segmentation approaches considered are benefit and situational and they are found to be beneficial in the understanding and prediction of consumer behavior.

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Currim, Imran S. and Dick R. Wittink, "Issues in the Development of a Marketing Support System Using Segment-Based Consumer Preference Models," in MARKET MEASUREMENT AND ANALYSIS, Montgomery and Wittink, eds., Cambridge, Mass.: Marketing Science Institute, 1980.

Darden, William R. and William D. Perrault, JR., "Classification for Market Segmentation: An Improved Linear Model for Solving Problems of Arbitrary Origin," MANAGEMENT SCIENCE, 24, (November 1977) pp. 259-71.

One problem in market segmentation involves creating the best classifications for segments. These segment classifications are frequently characterized by arbitrary origin and variance resulting in segment instability. A methodology is proposed (a refinement of Linear Typal Analysis) to help eliminate some of these problems. A review of Q-analysis is also provided.

Darden, William R. and Fred Reynolds, "Backward Profiling of Male Innovators," JOURNAL OF MARKETING RESEARCH, 11, (February 1974) pp. 79-85.

A "multidimensional conceptualization" is used to examine male innovators in a suburban environment. Since innovative behavior is found to be multidimensional, innovators can best be studied by looking at several product classes simultaneously. Classifications of male consumers are described based on the study. Segmentation of innovators is held to be possible by using cluster and discriminant anaylses.

Day, G.S., "Evaluating Models of Attitude Structure," JOURNAL OF MARKETING RESEARCH, 9, (August 1972) pp. 279-86.

Two basic areas of multifaceted attitude structure are covered. One deals with consistency theory, the other with preference judgements in a perceptual space using multidimensional scaling. Criteria are developed for models of attitude structure, especially those of a consistency theory nature. Several examples of models are given for each area, including a MDS study of building materials. An excellent bibliography on attitude structure concludes the article.

Day, G.S. and R.M. Heeler, "Using Cluster Analysis to Improve Marketing Experiments," JOURNAL OF MARKETING RESEARCH, 8, (August 1971) pp. 340-347.

The article is concerned with the proper choosing of stores or cities for marketing experiments such as test markets to maintain a fairly true representation of the market. The method used to improve the choice process is a form of cluster analysis utilizing a reduced space analysis. While cluster analysis is used in market segmentation studies, this article doesn't appear to be very helpful from a segmentation standpoint.

Delozier, Maynard W. and Rollie Tillman, "Self Image Concepts-Can They Be Used to Design Marketing Programs ?" SOUTHERN JOURNAL OF BUSINESS, 7, no. 1 (1972) pp. 9-15.

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The authors describe research in the area of brand image changes before and after an individual has purchased a new brand. Previous research in the area is briefly discussed. The authors find that for a new product, prediction of brand choice can be based on measurements of perceptions of self and one's ideal self.

Dickson, Peter R., "Person-Situation: Segmentation's Missing Link," JOURNAL OF MARKETING, 46, (Fall 1982) pp. 56-64.

Explores market segmentation by consumer's usage situations. Several segmentation techniques, including psychographic and benefit segmentation are reinterpreted from a person-situation perspective. Person-situation segmentation is found to be viable if substantial groups of consumers use a product in different ways. A nine-step procedure is outlined to conduct person-situation segmentation.

Dillon, William R., D.G. Frederick, and V. Tangpanichdee, "A Note on Accounting for Sources of Variation in Perceptual Maps," JOURNAL OF MARKETING RESEARCH, 19, (August 1982) pp. 302-11.

A recent article which is dedicated to incorporating group-level effects into perceptual mapping. Respondent and situational factors are found to interact with product attributes to influence preferences over multiattribute alternatives. The approach is viewed as a combination of multivariate analysis of variance and standard perceptual mapping techniques. Two examples are used to illustrate the method.

DIRECTORY OF U.S. AND CANADIAN MARKETING SURVEYS AND SERVICES. 3rd. ed., Fairfield, N.J.: C.H. Kline & Co., 1979.

Dolich, Ira J., "Congruence Relationships Between Self Images and Product Brands," JOURNAL OF MARKETING RESEARCH, 6, (February 1969) pp. 80-84.

The purpose of the article is to investigate whether products are perceived as symbols and if so, are organized into congruent relationships with self-concept. Consumer choice is related to matching product or brand images to self images. Products used in public and private consumption are studied--two of which are beer and cigarettes. Preferred brands were found to be more similar to self concepts than least preferred brands.

Dominguez, L. and F. Nicosia, "Some Practical Problems in Building Substantive Marketing Models," in BEHAVIORAL MODELS FOR MARKET ANALYSIS: FOUNDATIONS FOR MARKETING ACTION, Nicosia and Wind, eds., Hinsdale, Ill: Dryden Press, (1977).

Doyle, P. and P. Hutchinson, "The Identification of Target Markets," DECISION SCIENCES, 7, (1976) pp. 152-161.

Three multivariate techniques are compared in their ability to analyze data and segment markets. These are regression analysis, AID, and cluster analysis. The merits of market segmentation are discussed in general. Survey data are used to illustrate each method. Cluster analysis is found to be the best overall method to use.

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Doyle, P. and McGee, "Perceptions of the Preferences for Alternative Convenience Foods," JOURNAL OF THE MARKET RESEARCH SOCIETY, 15, no. 1, (1973).

Doyle, Peter and Ian Fenwick, "The Pitfalls of AID Analysis" JOURNAL OF MARKETING RESEARCH, 12, (November 1975) pp. 408-13.

The problems of Automatic Interaction Detection (AID) are illustrated by applying the methodology to a study of Sunday reading habits. Some of the limitations stated were the need for a large sample, intercorrelation of predictors is not taken into account, the presence of noise, meaningless splits, and only one-stage interactions are taken into account. The authors state that AID can best be used with regression analysis. AID is found to be especially susceptible to sampling and measurement errors.

Efron, Bradley, "Censored Data and the Bootstrap," JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION, 76, (1981) pp. 312-319.

Efron, Bradley and Gail Gong, "A Leisurely Look at the Bootstrap, the Jack-knife, and Cross-Validation," THE AMERICAN STATISTICIAN, 37, (February 1983) pp. 36-48.

Ehrenberg, A.S.C., "Predicting the Performance of New Brands," JOURNAL OF ADVERTISING RESEARCH, 11, (December 1971) pp. 3-10.

According to the author, prediction of new brand success is possible if one understands buyer behavior in the existing market. Sales are postulated to be a function of annual penetration level of the new brand. A study is described to illustrate this. The key to the prediction of new brand success depends on the annual purchase frequency.

Ekelblad, F.A. and S.F. Stasch, "On Methods: Criteria in Factor Analysis," JOURNAL OF ADVERTISING RESEARCH, 7, (Sept. 1967) pp. 48-57.

An early article describing factor analysis and its use in marketing applications. The importance of optimization criteria is explained. The use of various criteria in different situations is discussed. The importance to market researchers of understanding factor analysis is stressed.

Elrod, Terry and Russell S. Winer, "An Empirical Comparison of Aggregation Criteria for Developing Market Segments," in MARKET MEASUREMENT AND ANALYSIS, Montgomery and Wittink, (eds.) 1979, pp. 480-490.

An earlier version of the author's JM article of 1982. An empirical study is described in detail which builds market segments from the similarity of customers' responses to marketing policy variables. Designing segments based on profit improvement is found to be the best method for clustering the households.

Elrod, Terry and Russell S. Winer, "An Empirical Evaluation of Aggregation Approaches for Developing Market Segments," JOURNAL OF MARKETING, 46, (Fall 1982) pp. 65-74.

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Criteria for aggregating customers into market segments to achieve maximum profits are empirically tested. The most profitable way to segment is found to be based on customers' optimal levels of response to a marketing decision variable. A study is presented to illustrate this and its explanation is fairly technical.

Engel, James F., David T. Kollat, and Rodger D. Blackwell, "Personality Measures and Market Segmentation," BUSINESS HORIZONS, 12, (June 1969) pp. 61-70.

The authors cite evidence which states that personality seems to segment better not when used as an independent variable, but as an "intervening or moderating" variable. Personality characteristics and their use in segmentation research are reviewed. This is a fairly technical article which concludes by discussing how research efforts can be revised to make better use of personality information.

Epstein, Seymour, "The Self-Concept: A Review and the Proposal of an Integrated Theory of Personality," in PERSONALITY: BASIC ISSUES AND CURRENT RESEARCH, ed. by Ervin Staub, Englewood Cliffs, N.J.: Prentice-Hall, 1980.

Eskin, Gerald J., "Dynamic Forecasts of New Product Demand Using a Depth of Repeat Model," JOURNAL OF MARKETING RESEARCH, 10, (May 1973) pp. 115-129.

The demand of new consumer products is predicted by a measure of the strength of repeat purchases of the product. Previous models are briefly covered. The Eskin model is developed in a step-by-step fashion and is described in detail. Comparisons of the model with actual results is also provided. The model seems to predict demand fairly well.

Evans, Franklin B., "Psychological and Objective Factors in the Prediction of Brand Choice: Ford vs. Chevrolet," JOURNAL OF BUSINESS, (October 1959) pp. 340-69.

An early, but often cited, article dealing with a study in the automobile industry. An attempt is made to predict choice based on several personality characteristics. The study and theoretical support for the methods used are explained fully. This is one of earliest attempts at market segmentation using something other than demographic variables. Comparisons are made in how Ford and Chevrolet owners perceive both themselves and each other.

Everitt, Brian, CLUSTER ANALYSIS. London: Heinemann Educational Books, 1974. (Social Science Research Council)

Farley, J.U. and L.W. Ring, "Empirical Specification of a Buyer Behavior Model," JOURNAL OF MARKETING RESEARCH, 11, (February 1974) pp. 89-96.

A general discussion on evaluating models begins this coverage of a study concerned with buyer behavior. Canonical analysis and AID are used in the study. A schematic diagram of a buyer behavior model is provided.

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Fine, Seymour H., "Toward a Theory of Segmentation by Objectives in Social Marketing," JOURNAL OF CONSUMER RESEARCH, 7, (JUNE 1980) pp. 1-13.

The author investigates a method of market segmentation based on objectives and choice strategies of target consuming units. Improving nutrition is the topic covered although the concepts can be applied to more traditional products. Objectives or goals influence behavior through the development of chioce strategies to achieve the objective or goal. Understanding this process makes segmentation possible.

Fishbein, Martin, "Attitude and the Prediction of Behavior," in READINGS IN ATTITUDE THEORY AND MEASUREMENT, M. Fishbein, ed., 1967, pp. 477-492.

The relationship between attitude and behavior is explored. The concept and development of attitude theory is first covered. The difficulty in accurately defining attitude is stressed. Two reasons are given for the prior inability to predict behavior from attitude. The chief problem is held to be that behavior is not a given but has to be studied with the same intensity as attitude has been. An adaption of Dulany's theory of propositional control is presented in an attempt to predict behavior.

Fishbein, Martin, "A Behavior Theory Approach to the Relations Between Beliefs About an Object and the Attitude Toward the Object," in READINGS IN ATTITUDE THEORY AND MEASUREMENT, M. Fishbein, ed., 1967, pp. 389-400.

Attitude and belief are initially defined and two models are presented. They are attitude acquisition and relationships between attitudes and beliefs toward an object. According to the second model attitude toward an object is a function of the strength of beliefs toward the object and the evaluative aspect of those beliefs. The second model is extensively discussed.

Fisher, W.D., "On Grouping for Maximum Homogeneity," JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION, 53, (1958) pp. 789-98.

Fornell, Claes, "Three Approaches to Canonical Analysis," JOURNAL OF THE MARKET RESEARCH SOCIETY, 20, (July 1978) pp. 166-181.

The article deals with the problems associated with the correct use of canonical analysis. A framework is presented which hopefully makes its use easier. The three approaches described are canonical correlation, canonical variate analysis, and canonical regression. These are found to be considerably different, each requiring separate objectives and separate sets of statistics. The flexibility of conjoint analysis is stressed as is its applicability to different types of data analysis.

Frank, Ronald E., "But the Heavy Half Is Already the Heavy Half," paper presented to the American Marketing Asociation's Conference in Philadelphia, June 17-19, 1968.

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Frank, Ronald E., "Is Brand Loyalty a Useful Basis for Market Segmentation?" JOURNAL OF ADVERTISING RESEARCH, 7, (June 1967) pp. 27-33.

Brand loyalty is not found to be a good method for market segmentation. Criteria for proper segmentation are given as is a definition of brand loyalty. Loyal customers are found to not be identifiable by socioeconomic or personality characteristics, average demand levels, or sensitivity to promotion.

Frank, Ronald, "Predicting New Product Segments," JOURNAL OF ADVER- ADVERTISING RESEARCH, 12, (June 1972) pp. 9-13.

The inability to predict market segments for new products is stated as the largest reason for new product failure. The major question addressed is: Do new segments exist prior to new product introduction or as a result of the introduction? Consumer panels were used and they kept purchase diaries in two test markets. In the study four segments are created based on usage rates and family status. Canonical correlation analysis was found to be a good tool for delineating market segments.

Frank, Ronald E. and H.W. Boyd, "Are Private-Brand-Prone Grocery Customers Really Different ?" JOURNAL OF ADVERTISING RESEARCH, 5, no. 4, (1965) pp. 27-36.

Few differences are found between private brand and national brand consumers of grocery products. A study was conducted in response to increasing competition facing supermarkets in the early 1960's. The study uses consumer panel data from the Chicago area. Private and national brands are found to be direct competitors.

Frank, Ronald E., William F. Massy, and Thomas Lodahl, "Purchasing Behavior and Personal Attributes," JOURNAL OF ADVERTISING RESEARCH, 9, (December 1969) pp. 15-24.

Three beverage markets are investigated to see if prediction of purchase is improved by using psychographic as well as demographic information. As is usual in early psychographic research, this information was collected from a standard psychological written test. Conclusions about brand and store loyalty are stated. Personality variables are found, in this case, to add little to prediction of purchase.

Frank, Ronald E., William F. Massy, and Yoram Wind. MARKET SEGMENTATION. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1972.

A very good book dealing with several issues involving market segmentation. The book develops a framework for evaluating various segmentation strategies. It also shows how segmentation studies can be designed and gives several descriptions of alternative methodologies. Some areas covered include customer characteristics, situational characteristics, normative segmentation theory, and future concerns. A large bibliography concludes the book. (U of R HF5415 .F687)

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Frank, Ronald E. and Charles Strain, "A Segmentation Research Design Using Consumer Panel Data," JOURNAL OF MARKETING RESEARCH, 9, (November 1972) pp. 385-90.

The research design technique described here involves purchase data combined with a product specific attitudinal questionnaire. Canonical correlation analysis is used in the study to determine the relative importance of independent variables as predictors of purchase behavior and in the definition of market segments. The application of the model using actual data is described and market segments are identified. The research design is viewed as a tool to improve judgements of the market being studied.

Fry, Joseph N., "Personality Variables and Cigarette Brand Choice," JOURNAL OF MARKETING RESEARCH, 8, (August 1971) pp. 298-304.

A study of personality dispositions and brand chioce is discussed. Previous work in the area is cited as an introduction to the study itself. The study was conducted in Canada so extrapolating to the U.S. market may not be possible. Sex, social class, and self-confidence levels were found to be important variables. The goal of the model is to provide the marketer with a better psychological profile of his and his competition's customers.

Funkhouser, G. Ray, "A Note on the Reliability of Certain Clustering Algorithms," JOURNAL OF MARKETING RESEARCH, 20, (February 1983) pp. 99-102.

The reliability of cluster analysis results is questioned, especially in cases where cluster membership depends on a large number of factors. The Howard-Harris algorithm is discussed and ways to improve the method are stated. Degree of precision at all phases of a study is stressed.

Garda, R.A., "Strategic Segmentation: How to Carve Niches for Growth in Industrial Markets," MANAGEMENT REVIEW, 70, (August 1981) pp. 15-22.

A general article which looks at strategic market segmentation in industrial markets. Five different types of strategic market segments are identified. Identification of these segments is held to be the best way to pursue a niche strategy.

Gatty, Ronald, "Multivariate Analysis for Marketing Research," APPLIED STATISTICS, 15, (1966) pp. 157-72.

Gillo, M.W., MULTIVARIATE AND MULTIVARIABLE PREDICTION: AN INTRODUCTION TO THE USE OF THE MAID-M COMPUTER PROGRAM. Advanced Micro Devices, Inc., Sunnyvale, Calif., 197?.

A computerized version of MAID is described. This is a companion article to Gillo and Shelly (1974). Specific features of the program are covered as are detailed instructions for running the program. Actual output is provided from running the program on a CDC 6400 computer. The booklet is by necessity technical in nature yet valuable if the MAID segmentation scheme is utilized.

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Gillo, M.W. and M.W. Shelly, "Predictive Modeling of Multivariable and Multivariate Data," JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION, 69, (September 1974) pp. 646-90.

The original article describing the MAID-M model as an extension of automatic interaction detection (AID). MAID-M is the multivariate version of AID. The model is explained in detail and its application to actual data is illustrated. The model is also compared to other multivariate methods such as canonical correlation and discriminant analysis. Possible uses are suggested.

Ginter, J.L., "An Experimental Investigation of Attitude Change and Choice of a New Brand," JOURNAL OF MARKETING RESEARCH, 11, (February 1974) pp. 30-40.

The study investigates the relationships among attitude change, advertising exposure, and choice of a new brand. While it is found that attitudes can change before and after new brand choice, the post choice attitude is found to be of a greater magnitude and more highly correlated with choice. A unique feature of this study is that attitude change as influenced by advertising exposure is observed on the individual instead of the aggregate level.

Goodman, Leo A., "The Analysis of Multidimensional Contingency Tables: Stepwise Procedures and Direct Estimation Methods for Building Models for Multiple Classifications," TECHNOMETRICS, 13, (1971) pp. 31-62.

Green, Paul E., "A Model of Product Features Association," JOURNAL OF BUSINESS RESEARCH, 2, (April 1974) pp. 107-118.

Basically an example of multidimensional scaling and cluster analysis using the M-D-SCAL 5 program is described. Products and features are combined on the same perceptual space. The product features method of MDS is contrasted with the more popular bipolar attribute scale method.

Green, Paul E., "A New Approach to Market Segmentation," BUSINESS HORIZONS, 20, (February 1977) pp. 61-73.

A general article on the progress of market segmentation work to date. Market segmentation is held to be really of two types- a priori and post hoc. A method is stated which may help the researcher in evaluating various segmentation schemes. This involves a cluster comparison approach prior to segment base determination. A new way to segment markets, componential segmentation (COSEG), is also presented. The model has some similarities to conjoint analysis and is explained in fair detail. Hints on the proper use of COSEG are also provided.

Green, Paul E., "Hybrid Models for Conjoint Analysis: An Expository Review," working paper, University of Pennsylvania, (January 1983), 50 pages.

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The author classifies various hybrid models used in conjoint studies. Hybrid models are used to reduce the amount of respondent data needed. The article is well written but technical in some areas. Many recent studies are discussed and compared. The cross validity between hybrid studies and regular conjoint studies is found to be generally lacking. A good bibliography accompanies the paper.

Green, Paul E., "Marketing Applications of MDS: Assessment amd Outlook," JOURNAL OF MARKETING, 39, (January 1975) pp 24-31.

A general review of the development of multidimensional scaling (MDS) is given. Other areas covered include recent methodological development and new sclaing models as well as various applications in marketing, especia;;y predictive studies. Several areas for possible conflict in using MDS are explained including differences in computer programs, stress values, and proliferation of algorithms. MDS is found to contribute little to new product design, although it is found to be a useful diagnostic tool.

Green, Paul E., "On the Design of Experiments Involving Multifactor Alternatives," JOURNAL OF CONSUMER RESEARCH, 1, (September 1974) pp. 61-68.

Two methods, orthagonal arrays and incomplete block designs, are explained. These are ways to reduce the number of multifactor combinations needed to get both the information needed and to maintain experimental balance. Some empirical studies are used to illustrate the procedures. These methods of reducing the number of combinations will be used in later multiattribute research (e.g. conjoint analysis).

Green, Paul E., "On the Robustness of Multidimensional Scaling Techniques," JOURNAL OF MARKETING RESEARCH, 12, (February 1975) pp. 73-81.

A fairly technical article in which metric and nonmetric multidimensional scaling techniques are examined from the standpoint of their vulnerability to error. An integer-rank transformation is shown to be useful in dealing with nonlinearities in metric MDS.

Green, Paul E. and Frank J. Carmone, "An AID/Logit Approach for Analyzing Large Multiway Contingency Tables," JOURNAL OF MARKETING RESEARCH, 15, (February 1978) pp. 132-36.

A procedure is described which combines AID with logit analysis. An empirical study is used to illustrate the use of AID to isolate variables in a multiway contingency to best explain variance in the criterion. The logit analysis is then used for estimating parameters for prediction purposes. AID is used as a screening process for the logit model and is found to be effective when one is faced with a large number of predictor variables.

Green, Paul E. and Frank J. Carmone. MULTIDIMENSIONAL SCALING AND RELATED TECHNIQUES IN MARKETING ANALYSIS. Allyn & Bacon, Boston, 1970.

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Green, Paul E. and Frank J. Carmone, "Segment Congruence Analysis: A Method for Analyzing Association Among Alternative Bases of Market Segmentation," JOURNAL OF CONSUMER RESEARCH, 3, (March 1977) pp. 217-22.

A research method called multidimensional contingency table analysis is used to determine which set of variables can best be used as a basis for segmentation. The specific method used is called Segment Congruence Analysis and is illustrated by an empirical study.

Green, Paul E., Frank J. Carmone, and David P. Wachpress, "Consumer Segmentation Via Latent Class Analysis," JOURNAL OF CONSUMER RESEARCH, 3, (December 1976) pp. 170-74.

A nontechnical description of latent class analysis is followed by a discussion of an algorithm called CANDECOMP. Its use is illustrated by an example from the telecommunications industry. The authors suggest areas of consumer and market research where latent class analysis may prove useful.

Green, Paul E., Frank J. Carmone, and David P. Wachpress, "On the Analysis of Qualitative Data in Marketing Research," JOURNAL OF MARKETING RESEARCH, 14, (February 1977) pp. 52-59.

A technical article which discusses the use of logit and log-linear models for analyzing categorical data. Each method is applied to an empirical problem in the telecommunications industry. Marketing applications of the two models are also discussed.

Green, Paul E., J.D. Carroll, and Stephen M. Goldberg, "A General Approach to Product Design Optimization Via Conjoint Analysis," JOURNAL OF MARKETING, 45, (Summer 1981) pp 17-37.

A procedure for describing product or service design optimization is explained in detail. Product Optimization and Selected Segment Evaluation (POSSE) uses conjoint analysis as a base but is extended further in determining target market segments. Other product optimizing models are also described. These are broken down into two main approaches: MDS Joint Space and Conjoint Analysis. Some pilot studies illustrating the applications of POSSE are also presented. Limitations are discussed.

Green, Paul E. and Wayne S. DeSarbo, "Componential Segmentation in the Analysis of Consumer Behavior," JOURNAL OF MARKETING (October 1979) pp. 83-91.

The paper describes a trade-off model (COSEG-II) which treats consumer preference as a function of product attributes and the interaction of product and person attributes. The model uses conjoint analysis as a basis but goes beyond it in considering these interactive effects. The model is found to reduce data collection costs in commercial marketing research.

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Green, Paul E., Ronald E. Frank, and P.J. Robinson, "Cluster Analysis in Test Market Selection," MANAGEMENT SCIENCE, 13, (April 1967) pp. B-387-400.

Green, Paul E., Stephen M. Goldberg, and Mila Montemayor, "A Hybrid Utility Estimation Model for Conjoint Analysis," JOURNAL OF MARKETING, 45, (Winter 1981), pp. 33-41.

A conjoint analysis model is described whose goal is the reduction of costly data collecttion at the consumer level. Decompositional models are used which can develop utility functions which include individual differences without the large amount of respondent information normally required. The model is described and applied to a study of antibiotics (physicians would be the consumers). Extensions of the model are suggested.

Green, Paul E., M.H. Halbert, and P.J. Robinson, "Canonical Analysis: An Exposition and Illustrative Application," JOURNAL OF MARKETING RESEARCH, 3, (February 1966) pp. 32-39.

An early article on canonical analysis which finds that the procedure is appropriate to use when sets of criterion and predictor variables are to be correlated. The method is described as is its relationship to other multivariate techniques such as factor analysis. Extensions of the method and limitations are also discussed. A study is described although it is not of a marketing nature.

Green, Paul E. and Arun Maheswari, "Common Stock Perception and Preference: An Application of Multidimensional Scaling," JOURNAL OF BUSINESS, 42, (October 1969) pp. 439-57.

While this article is not primarily marketing in nature, it does deal with consumer preference for a product/service and is an example of the variety of uses to which multidimensional scaling can be applied. A brief history of MDS development up to 1969 is given. The study itself and the application of MDS to the problem are described in detail.

Green, Paul E. and V. Rao. APPLIED MULTIDIMENSIONAL SCALING: A COMPARISON OF APPROACHES AND ALGORITHMS. New York: Holt, Rinehart, and Winston, 1972.

Green, Paul E. and V. Rao, "Conjoint Measurement for Quantifying Judgemental Data," JOURNAL OF MARKETING RESEARCH, 8, (1971) pp. 353-363.

The article is designed to "introduce marketing researchers to some of the concepts and potential applications of conjoint measurement." Conjoint measurement is described as being concerned with the joint effects of independent variables on the ordering of a dependent variable. Three hypothetical situations are presented which illustrate possible uses of conjoint measurement. Limitations of the concept are also covered.

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Green, Paul E. and V. Srinivasan, "Conjoint Analysis in Consumer Research: Issues and Outlook," JOURNAL OF CONSUMER RESEARCH, 5, (September 1978) pp. 103-23.

Conjoint analysis is reviewed with special emphasis given to issues involved in implementing the research technique. Attention is given to the individual nature of data collection, stimulus presentation, and various measurement scales. Reliability and validity tests are also discussed. New applications and extensions of conjoint analysis such as modeling of perceptions and componential segmentation are discussed in detail. This is a thorough, basically nontechnical coverage of conjoint analysis and concludes with an extensive bibliography.

Green, Paul E. and Donald S. Tull. RESEARCH FOR MARKETING DECISIONS, 4th ed. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1978, 618 pages.

An excellent textbook which deals with many phases of marketing research. Areas of interest include regression, ANOVA, discriminant, factor, and cluster analyses, MDS, conjoint analysis, and market segmentation. The chapters are well written and not extremely technical. Most concepts are illustrated with actual studies and examples of typical results from these studies. The book is particularly strong in areas where Green has done research such as MDS and conjoint analysis.

Green, Paul E. and Yoram Wind. MULTIATTRIBUTE DECISIONS IN MARKETING: A MEASUREMENT APPROACH. Hinsdale, Illinois: Dryden Press, 1973.

Green, Paul E. and Yoram Wind, "New Way to Measure Consumer's Judgements," HARVARD BUSINESS REVIEW, 53, (July-August 1975), pp. 107-117.

A general article which describes the use of conjoint analysis in marketing. The conjoint technique is described using a carpet cleaner study as an example. Two other studies, air services and replacement tires, are also discussed. Potential uses of the technique are stated. Additional methods of quantifying consumer judgements are included in an appendix to the article.

Green, Paul E., Y. Wind, and H.J. Claycamp, "Brand-Features Congruence Mapping," JOURNAL OF MARKETING RESEARCH, 12, (August 1975) pp. 306-313.

A model is described which uses several algorithms, including PREFMAP and INDSCAL to portray individual's associative judgements as a set of points in a common multidimensional space. The model is compared to the bipolar scale ratings used in value-expectancy models. The associative judgements are internal comparisons consumers make among attributes or brand features in a product.

Green, Paul E., Y. Wind, and A.K. Jain, "Analyzing Free Response Data in Marketing Research," JOURNAL OF MARKETING RESEARCH, 10, (February 1973) pp. 45-52.

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The authors present a method of analyzing free response data by using reduced space and clustering procedures. The attempt is to provide a structured approach to analyzing unstructured information. The results of two studies, shampoo and home magazines, are presented. The method involves a form of multi-dimensional scaling resulting in hierarchical tree structures of phrase combinations. Extensions of the methodology are suggested as are potential applications in othe areas of marketing.

Green, Paul E., Y. Wind, and A.K. Jain, "Benefit Bundle Analysis," JOURNAL OF ADVERTISING RESEARCH, 12, (1972) pp. 31-36.

The authors are concerned with the quantification of benefit importance. Conjoint measurment is used in a benefit bundle analysis of the floor cleaner market. The study is briefly described and the results are discussed at length. The article is basically an application of conjoint analysis.

Grubb, Edward L. and Harrison L. Grathwohl, "Consumer Self-Concept, Symbolism and Market Behavior: A Theortical Approach," JOURNAL OF MARKETING, 31, (October 1967) pp. 22-27.

An early article on consumer behavior and an individual's self-concept. Prior research is briefly reviewed and a theory of consumer behavior is developed. The authors hold that a consumer will act to enhance his self-concept, which is formed by the interaction of himself and others. These actions include the purchase of symbolic goods. Marketers should consider this when segmenting markets.

Haley, R.I., "Benefit Segmentation: A Decision-Oriented Research Tool," JOURNAL OF MARKETING, 32, (July 1968) pp. 30-35.

An article dealing with the differences between descriptive and causal factors in determining future purchase behavior. Several descriptive methods of segmentation are presented and are found to not be efficient in predicting future buying behavior. Benefit segmentation is found to be a good predictor that is both practical and operational. A hypothetical study is described. Some examples of segments found in benefit segmentation studies are given.

Haley, R.I., "Beyond Benefit Segmentation," JOURNAL OF ADVERTISING RESEARCH, 11, (August 1971) pp. 3-8.

The author holds that benefit segmentation can increase media efficiency and the impact of advertising can be significantly increased. This is possible by increasing the attention paid to advertising. Benefit segmentation is held to be able to create copy which will more effectively penetrate "perceptual screens" consumers set up to drown out ads. Some case histories are given as examples.

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Harman, H.H. MODERN FACTOR ANALYSIS. 2nd ed. University of Chicago Press, 1967.

Hartigan, J. CLUSTERING ALGORITHMS. New York: John Wiley (1975).

Hauser, J.R. and F.S. Koppelman, "Alternative Perceptual Mapping Techniques: Relative Accuracy and Usefulness," JOURNAL OF MARKETING RESEARCH, 16, (November 1979) pp. 495-506.

Factor analysis is compared to discriminant analysis and similarity scaling and is found to be a better technique to use when doing perceptual mapping. Each of the three methods is described theoretically. An empirical study is used for the comparison. Factor analysis is found to provide for better prediction and interpretation, and is easier to use. A good bibliography concludes the article.

Hauser, J.R. and P. Simmie, "Profit Maximizing Perceptual Positions: An Integrated Theory for the Selection of Product Features and Price," MANAGMENT SCIENCE, 27, (January 1981) pp. 33-56.

To achieve desired product positioning, one must understand the link in consumers of physical characteristics to perceptual dimensions. A theory is developed in detail and hypothetically tested for selected physical features and price to achieve a perceptual position which is profit maximizing. A good bibliography concludes the article.

Hawkins, Del, Don Roupe, and Kenneth Coney, "The Influence of Geographic Subcultures in the United States," ADVANCES IN CONSUMER RESEARCH, Kent Monroe, ed., 8, (1980) pp. 713-717.

Geographic subcultures, as partially identified by regions and degree of urbanness, can help classify users and nonusers. A model of geographic influence is presented which incorporates physical and human landscape, value/preference systems, and life styles. Subcultures are found to be fairly stable and of interest to the developers of marketing strategy.

Heeler, R.M., T.W. Whipple, and T.P. Hustad, "Maximum Likelihood Factor Analysis of Attitude Data," JOURNAL OF MARKETING RESEARCH, 14, (February 1977) pp. 42-51.

Fairly technical coverage is given to a method for developing and testing appropriate factor structures for different population groups. Marketing applications of two possibilities are provided. The methods are found to be useful techniques for analyzing attitude data.

Heller, Harry E., "Defining Target Markets by Their Attitude Profiles," ed. by Lee Adler and Irving Crespi in ATTITUDE RESEARCH ON THE ROCKS. American Marketing Association (1968) pp. 45-57.

Attitudes and their relationship to purchase behavior are discussed. The concept of a sphere of attitudes is introduced with attitudes towards specific product/services being a subset of this sphere. Attitude groups can serve to simplify the sphere. Consumers can be fitted into these groups and then be acted upon through marketing tools.

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Hendrickson, A.E. and P.O. White, "PROMAX-A Quick Method for Rotation to Simple Structure," BRITISH JOURNAL OF STATISTICAL PSYCHOLOGY, 17, Part 1, (1964).

Hermiter, J.D. and V. Cook, "A Multidimensional Stochastic Model of Consumer Purchase Behavior," University of Chicago Center for Multitudinal Studies in Business and Economics, June 1970.

Herniter, J.D., "A Comparison of the Entropy Model and the Hendry Model," JOURNAL OF MARKETING RESEARCH, 11, (February 1974) pp. 21-29.

Two consumer purchase behavior models are described and compared. Market share information is important to both models in determining the amount of brand switching that occurs. A technical explanation of the two models is first given. Comparisons are limited especially in multibrand situations due to the lack of published information on the Hendry model.

Hope, K. METHODS OF MULTIVARIATE ANALYSIS. University of London Press, 1968.

Hotelling, Harold, "The Most Predictable Criterion," JOURNAL OF EDUCATION PSYCHOLOGY, 26, (February 1935), pp. 139-42.

Huber, Joel, "Predicting Preference on Experimental Bundles of Attributes: A Comparison of Models," JOURNAL OF MARKETING RESEARCH, 12, (August 1975) pp. 290-97.

Several generic models are compared based on their ability to predict individual preferences on stimuli defined by physical characteristics. The models considered included additive, ideal point, and two stage. Suggestions for future research are also given.

Hutt, Michael D., William V. Muse, and Robert J. Kegerreis, "Market Segmentation Using Behavioral Variables," SOUTHERN JOURNAL OF BUSINESS, 7, (1972), pp. 55-64.

A fairly general article in which a market segmentation study of the automobile market is described. Individuals who are buying a car for the first time are compared with those who had purchased a car before. Maverick and VW buyers were studied. Few differences were found demographically but behavorial differences were apparent. These differences are discussed.

Jaffe, B., "Use Peceptual Segmentation Reseach to See Brands Through Eyes of the Consumer," MARKETING NEWS (September 17, 1982) sec. 2:4.

Jain, S.C., "Life Cycle Revisited: Applications in Consumer Research," Proceedings of the 5th Annual Conference of the Association for Consumer Research, 1975.

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Johnson, Michael E., "Context Effects in Product Perception," ADVANCES IN CONSUMER RESEARCH, Kent Monroe, ed., 8, (1980) pp. 112-115.

An experiment is described which indicates that there are context effects in consumer perceptions of product similarity. In other words product perceptions are influenced by unique features as well as by shared dimensions. This is held to invalidate procedures such as MDS. Products are viewed as sets of qualitative features.

Johnson, Richard M., "Market Segmentation: A Strategic Management Tool," JOURNAL OF MARKETING RESEARCH, 8, (February 1971) pp. 13-19.

The demands of market segmentation studies on the market researcher are discussed. Three basic problems are analyzed and their solutions illustrated with actual data. The concept of a product's space and its construction is important as is the identification of consumer's ideal points.

Jones, F.L., "Cluster Analysis and Market Segmentation: A Note on Other Techniques with an Illustration from Urban Sociology," JOURNAL OF THE MARKET RESEARCH SOCIETY, 14, (April 1972) pp. 124-26.

Jones, J.M. and F.S. Zufryden, "Adding Explanatory Variables to a Consumer Purchase Behavior Model: An Exploratory Study," JOURNAL OF MARKETING RESEARCH, 17, (August 1980) pp. 323-334.

A technical article which proposes a stochastic choice model that combines logit regression, heterogeneity, and product class purchase incidence concepts. The model can accept any number of explanatory variables. Earlier work in the consumer purchase behavior area is mentioned. A study is described and the model is successfully applied to it.

Joyce, Timothy and C. Charron, "Classifying Market Survey Respondents," APPLIED STATISTICS, 15, (November 1966) pp. 191-215.

Kernan, Jerome B., "Choice Criteria, Decision Behavior, and Personality," JOURNAL OF MARKETING RESEARCH, 5, (May 1968) pp. 155-63.

A study is described which attempts to bridge the gap between decision theory and actual decision behavior. The problem is concerned with whether choice criteria or intuition are used in decision making. Choice criteria can be formally stated, with intuition this is not the case. The study is described in detail and various multivariate methods are applied to the data. Implications of the findings are discussed.

Klahr, David, "Decision Making in a Complex Environment: The Use of Similarity Judgements to Predict Preferences," MANAGEMENT SCIENCE, 15, (1969) pp. A-595-618.

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Klastorin, T.D., "Assessing Cluster Analysis Results," JOURNAL OF MARKETING RESEARCH, 20, (February 1983) pp. 92-98.

A technical article which is concerned with statistically assessing cluster analysis results. Several different measures are discussed, based on within-group homogeneity and between-group heterogeneity. A numerical example is given to illustrate some of the measures. A good bibliography concludes the article.

Kogan, M. and J.C. Wallace, "A New Coefficient for Cluster Discrimination," AUSTRALIAN JOURNAL OF PSYCHOLOGY, 6, 1969.

Kotler, Philip. MARKETING DECISION MAKING: A MODEL BUILDING APPROACH. New York: Holt Rinehart and Winston, 1971.

Kotler, Philip. PRINCIPLES OF MARKETING. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1980, pp. 291-309.

A good general text book chapter on market segmentation. Segmentation theory is introduced and four general divisions are covered. These are gepgraphic, demographic, psychographic, and behavioristic. Life style concepts are not discussed and specific models are not mentioned. Examples are given from well-known companies to illustrate the use of segmentation variables from each of the four groups. Requirements for effective segmentation are also mentioned. (U of R HF5415 .K636)

Kraft, Frederic B., Donald H. Granbois, and John O. Summers, "Brand Evaluation and Brand Choice: A Longitudinal Study," JOURNAL OF MARKETING RESEARCH, 10, (August 1973) pp. 235-41.

A study is described which uses a "summated index" as a predictor of brand purchase. The index was found to be a good predictor but not really any better than any other methods. Suggestions for future research are stated.

Kruskal, Joseph B. and Frank J. Carmone, "MONANOVA: A FORTRAN IV Program for Monotone Analysis of Variance," BEHAVIORAL SCIENCE, 14, (1969) pp. 165-6.

A very brief article which describes a computer program for transforming data in a factorial experiment. An address is given to contact for further information.

Lambert, Z.V. and R.M. Durand, "Some Precautions in Using Canonical Analysis," JOURNAL OF MARKETING RESEARCH, 12, (November 1975) pp. 468-75.

The potential shortcomings of canonical correlation analysis when used in marketing research are stated. A brief overview of canonical analysis is given. Limitations include the inability to detect shared variance of variables, weight instabiltiy or variability from sample to sample, interpretational problems due to using subsets of variables for predictive purposes, and improper loadings. Canonical analysis is held to be an invaluable tool for the researcher so long as these limitations aren't ignored.

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Landon, E.L., "Self Concept, Ideal Self Concept, and Consumer Purchase Intentions," JOURNAL OF CONSUMER RESEARCH, 1, (September 1974) pp. 44-51.

The article begins with a discussion of previous research on the topic of self image and product image. Dolich (1969) is cited among others. Different theories of self concept are described. A study is presented which attempts to clarify the relative importance of self image and ideal self image to the purchase intentions of consumers. The study finds that some consumer's purchase intentions are correlated with self image and some with ideal self image. A consumer may use both self images for different products. A link between image and purchase intentions is established.

Lessig, V.P. and John Tollefson, "Market Segmentation Through Numerical Taxonomy," JOURNAL OF MARKETING RESEARCH, 8, (November 1971) pp. 480-87.

One of the often heard criteria for market segmentation models is that they should identify the customers more likely to respond to marketing stimuli than others. A method is described which attempts to do this by using cluster analysis to identify buyer behavior similarity groups. Data from a pilot study is presented. The theory is that consumers who exhibit similar buying behavior and have similar personal characteristics are likely to have similar purchase response functions.

Loudon, David L. and Albert J. Della Bitta. CONSUMER BEHAVIOR: CONCEPTS AND APPLICATIONS. New York: McGraw-Hill Book Co., 1979, pp. 61-118.

Two chapters are devoted to market segmentation--basic approaches and added dimensions. The first chapter deals with basic demographic segmentation as well as the rationale for segmentation. The second chapter covers psychographic, benefit, and product-usage segmentation. Pictorial examples of advertising using segmentation messages are provided. The writing is straight-forward and several examples from consumer markets are given. (R&D HF5415.3 .L68)

Madansky, Albert, "On Conjoint Analysis and Quantal Choice Models," THE JOURNAL OF BUSINESS, 53, (July 1980), pp. 537-44.

Magidson, Jay, "Some Common Pitfalls in Causal Analysis of Categorical Data," JOURNAL OF MARKETING RESEARCH, 19, (November 1982) pp. 461-71.

Common errors in the analysis of categorical data are discussed. Log-linear modeling and chi square automatic interaction detection (CHAID) are found to be powerful tools for gaining causal insights into this type of data. Some pitfalls include biasing effects of omitted variables, omitted interactions, improper contrast coding, and misspecification of the form of mathematical model to be used. Several examples are used to illustrate these concepts.

Malhotra, Naresh K., "Structural Reliability and Stability of Nonmetric Conjoint Analysis," JOURNAL OF MARKETING RESEARCH, 19, (May 1982) pp. 199-207.

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Conjoint analysis is found to be a "fairly robust" procedure for determining an individual's preferences. The procedure is put through rigorous testing involving severe "structural perturbation" and substantial variation in the number of stimulus profiles. The author concludes that the "cognitive processes" underlying conjoint analysis and MDS warrant closer examination.

Martin, Claude R. and Roger L. Wright, "Profit Oriented Data Analysis for Segmentation: An Alternative to AID," JOURNAL OF MARKETING RESEARCH, 11, (August 1974) pp. 237-42.

A new AID-like algorithm is described which is intended to overcome some of the conceptual problems inherent in using AID for consumer segmentation. This algorithm (SIMS) is based on a cost-profit simulation. A study is described in which the SIMS algorithm is applied to a segmentation problem in retail clothing. The SIMS method is found to give more meaningful splits from a marketing point of view.

Massy, William F., "Forecasting the Demand for New Convenience Products," JOURNAL OF MARKETING RESEARCH, 6, (November 1969) pp 405-412.

The stochastic evolutionary adoption model (STEAM) is briefly described. The coverage of the model is fairly technical in nature. The model uses purchase data from consumer panels to project future demand. The model can predict sales after three years using data for only six months. An example of the model's use is also provided.

May, Jerrold H., Allan D. Shocker, and D. Sudharshan, "On Optimal New Product Locations with a Simulation Comparison of Methods," working paper, University of Pittsburgh, 8, (1980).

Mazis, Michael B., et al., "A Comparison of Four Multi-attribute Models in the Prediction of Consumer Attitudes," JOURNAL OF CONSUMER RESEARCH, 2, (June 1975) pp. 38-52.

Four multi-attribute models are compared. They are 1) Rosenburg's model with product characteristics, 2) Rosenburg's model with values, 3) Fishbein's model, and 4) the adequacy-importance model. Each model is described and three experiments conducted on the predictibility of the models. One of the experiments is partially concerned with beliefs in cigarette smoking. The adequacy model appears to be the best in the prediction of attitudes and behavior. To understand the determinants of attitude, the choice of the proper model is more difficult.

MacCallum, Robert C., "Relations Between Factor Analysis and Multidimensional Scaling," PSYCHOLOGICAL BULLETIN, 81, (1974) pp. 505-16.

The relationship between metric and nonmetric multidimensional scaling to factor analysis is described. The metric versions of each technique are compared as are the nonmetric versions. Areas covered include type of data required, basic assumptions of the data, goals of the data, shared computational methods, and the nature of the respective solutions of the techniques. The metric versions of the two techniques are found to overlap to some extent.

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MacLachlan, D.L. and J.K. Johansson, "Segmentation With Multiple Criterion Variables," in MARKET MEASUREMENT AND ANALYSIS, Montgomery and Wittink, (eds.) 1979, pp. 464-479.

An earlier version of the author's JM article of 1981. The multivariate AID system is explained and then compared to canonical analysis for market segmentation uses. A study using data from the telephone industry is described. MAID is found to be better than canonical analysis for the identification of mar-ket segments with multiple behavorial response variables.

MacLachlan, D.L. and J.K. Johansson, "Market Segmentation with Multivariate AID," JOURNAL OF MARKETING, 45, (Winter 1981) pp. 74-84.

The authors propose a multivariate form of AID rather than canonical analysis for market segmentation using multiple criterion variables. This method is referred to as MAID. The procedure is held to be useful in many marketing applications and an empirical example is given for long distance telephone usage. The limit-ations of AID and MAID are stated and solutions are suggested. Doyle and Fenwick (1975) are contradicted in the overall applic-ability of AID; their usage is said to be too restricted.

McAlister, Leigh, "Choosing Multiple Items From a Product Class," in MARKET MEASUREMENT AND ANALYSIS, Montgomery and Wittink, (eds.) 1979, pp. 355-377.

The article begins with the premise that consumer's preference for an item in a product class is not effected by other items in the class. This is held to be false for classes where balancing or rounding out might occur. A number of models are described which attempt to handle this discrepency (attribute satiation, random choice, etc.). A lottery model appears to provide the best results. The author concludes that dependence among choices from a product class must be incorporated into choice determination models.

McCann, J.M., "Study of Market Segment Response to the Marketing Decision Variables," JOURNAL OF MARKETING RESEARCH, 11, (November 1974) pp. 399-412.

A study is described which demonstrates that it is possible to measure differences in market segments in terms of their responsiveness to various marketing decision variables. Some of these are advertising amount, price, and level of dealing. The study uses purchase data readily available for several hundred con-sumers. Each phase of the study is described in detail as are the various segmentation results.

McCrohan, Kevin F., "An Application of the Social Character Construct in Market Segmentation," JOURNAL OF THE MARKET RESEARCH SOCIETY, 22, (October 1980) pp. 263-67.

The automotive market is discovered to have the ability to be segmented according to Reisman's theory of inner/other-directed social character. Reisman's theory is described and then applied to the automobile market in this brief article. The segments derived can be described in social acceptance and prestige terms.

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McDonald, Susan S. and Alfred E. Goldman, "Strategies of Segmentation Research," in A LOOK BACK, A LOOK AHEAD, George B. Hafer, ed., Chicago: American Marketing association (1979) pp. 30-42.

The authors are concerned with the application of segmentation research. They take care to say that thay are talking about conceptuall alternatives as opposed to mathematical techniques. They divide segmentation variables into two broad areas, attitude and behavior, and each is explained. Several different segmentation variables are identified and discussed (benefit, occasion based, and occasion specific). A good general article. (U of R HF5415.2 .A773 1979)

McIntyre, Shelby H., "Obstacles to Corporate Innovations," BUSINESS HORIZONS, 25, (January-February 1982) pp. 23-28.

The ability of large corporations to be innovative is called into question. Several obstacles are seen to innovation. Some of these are resistence to change in large companies, innovation may threaten current "stars", the corporation breeds conservatism, political concerns preclude innovation, and short-term orientations keep long-term development from occuring. Solutions are suggested which will enable innovation in large companies to occur. Chief among these is a top level commitment to the innovative process.

Michman, Ronald D., Myron Gable, and Walter Gross. MARKET SEGMENTATION: A SELECTED AND ANNOTATED BIBLIOGRPHY. Chicago: American Marketing Association, (1977).

A good general publication which provides annotations for journal articles in several fields of market segmentation. Some of the areas covered are segmentation strategies, behavioral variables, purchasing influences, and psychographics. An index of authors is provided at the end of the booklet. Many of the articles in this annotation are also found in this work. (VCU Z7164 .M18 M52)

Monk, D., "Burnett Life Style Research," EUROPEAN RESEARCH, 1, (1973) pp. 14-19.

Montgomery, D.B., "New Product Distribution: An Analysis of Supermarket Buyer Decisions," JOURNAL OF MARKETING RESEARCH, 12, (August 1975) pp. 255-64.

A study is described in which 18 variables are related to a supermarket buyer's decision to buy a new product. A linear discriminant analysis is used along with a unique threshold model called a "gatekeeper" analysis. The gatekeeper analysis produces results similar to AID and is described in some detail. Like AID, a large sample is needed for valid results.

Morgan, James N. and Robert C. Messenger. THAID: A SEQUENTIAL ANALYSIS PROGRAM FOR THE ANALYSIS OF NOMINAL SCALE DEPENDENT VARIABLES. Ann Arbor, Michigan: Survey Research Center, 1973.

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Morgan, James N. and John A. Sonquist, "Problems in the Analysis of Survey Data and A Proposal," JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION, 58, (September 1963) pp. 415-34.

Morgan, N. and J.M. Purnell, "Isolating Openings for New Products in a Multidimensional Space," JOURNAL OF THE MARKET RESEARCH SOCIETY, 11, no. 3, (1969) pp. ?

Morrison, D.G., "On the Interpretation of Discriminant Analysis," JOURNAL OF MARKETING RESEARCH, 6, (May 1969) pp. 156-63.

This article is concerned with the evaluation of linear discriminant analyses. The article is statistical in nature and provides several insights into the proper interpretation of this type of research.

Morrison, D.G., "Measurement Problems in Cluster Analysis," MANAGMENT SCIENCE, 13, (August 1967) B-775-80.

Myers, James H., "Benefit Structure Analysis: A New Tool for Product Planning," JOURNAL OF MARKETING, 40, (October 1976) pp. 23-32.

Consumer reactions to specific benefits and physical characteristics of a product/service are studied as a method for new product planning. The method is described and applied to a consumer product study. Benefits and benefit needs are classified as those wanted and those which are deficient in product offerings.

Myers, James H. and Edward Tauber. MARKET STRUCTURE ANALYSIS. Chicago: American Marketing Association, 1977. pp. 68-90.

A general chapter covering multivariate response-based segmentation research. The process of arriving at segments and their description is discussed. Current segmentation techniques such as factor analysis, clustering methods, AID, and canonical analysis are covered. Examples of output from the methods are presented and explained. The entire book is valuable reading. (HF5415.125 M93)

Myers, John G., "An Interactive Computer Approach to Product Positioning in Y. Wind and M. Greenberg, eds., MOVING A HEAD WITH

ATTITUDE RESEARCH. Chicago: American Marketing Association, 1977, pp. 157-64.

Mainly a discussion on data gathering techniques using interactive computer models. A study is described using a computer controlled laboratory method in a product positioning study in the automotive industry. Does not seem to be applicable to segmentation research.

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Naert, P. and P. Leeflang. BUILDING IMPLEMENTABLE MARKETING MODELS. Boston: Martinus Division, Leider (1978).

Nakanishi, Masao, "Advertising and Promotion Effects on Consumer Response to New Products," JOURNAL OF MARKETING RESEARCH, 10, (August 1973) pp. 242-49.

The extended effects of advertising and promotion are considered in predicting consumer response to new products. The model is technically explained and an empirical application is provided.

Narasimhan, C. and Subrata K. Sen, "New Product Models for Test Market Data," JOURNAL OF MARKETING, 47, (Winter 1983) pp. 11-24.

Nine test market models are evaluated to determine which is the best in predicting performance of a new brand in an inexpensive, frequently purchased product category. The models are evaluated on both theoretical criteria as well as managerial dimensions using typical information obtained from test markets. Three models are found to be promising (Parfitt-Collins, NEWS, and TRACKER). These are described in greater detail. A good bibliography concludes the article.

Neidell, L.A., "The Use of Nonmetric Multidimensional Scaling in Marketing Analysis," JOURNAL OF MARKETING, 33, (October 1969) pp. 37-43.

An early article on multidimensional scaling which discusses the innovative features of the product. The method is described in a nontechnical way. An example is given and possible future applications of the method are stated. The use of MDS as a market segmentation is also covered.

Nicosia, F.M. and Y. Wind, eds., THE USES OF THEORIES AND MODELS IN MARKETING: AN INTRODUCTION. Dryden Press, Illinois, 1977.

Olshavsky, R.W. and J.A. Miller, "Consumer Expections, Product Performance, and Perceived Product Quality," JOURNAL OF MARKETING RESEARCH, 9, (February 1972) pp. 19-21.

The authors find that overstating product attributes or abilities (and thereby artificially raising consumer expectations) can increase the ratings of overall performance for a product. Findings are based on a study conducted using tape recorders. The study contradicts the work of other authors.

Ostland, L.E., "Identifying Early Buyers," JOURNAL OF ADVERTISING RESEARCH, 12, (April 1972) pp. 25-30.

A model for predicting new product adoption is tested. The study was conducted on housewives in a large city and frequently purchased consumer products were tested. Perceptual variables alone predicted purchase as readily as they did when combined with demographic variables. The author decides that advertising appeals should be directed toward these perceptual variables.

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Ostland, L.E., "Perceived Innovation Attributes as Predictors of Innovativeness," JOURNAL OF CONSUMER RESEARCH, 1, (September 1974) pp. 23-29.

Two studies are described which apply diffusion theory to two new consumer products. Discrmination of buyers and nonbuyers is based on personal characteristics and each respondent's perceptions of the new products. Perceptual variables were found to be better predictors of purchase tendency than personal (including demographic) characteristics. Perceptions of innovations can be effective predictors of innovativeness.

Overall, J.E. and C.J. Klett. APPLIED MULTIVARIATE ANALYSIS. New York: McGraw-Hill Book Company, (1972) pp. 180-239.

Parfitt, J.H. and B.J.K. Collins, "Use of Consumer Panels for Brand Share Prediction," JOURNAL OF MARKETING RESEARCH, 5, (May 1968) pp. 131-145.

The authors describe a method of predicting market share of new brands and later, stable market share by using the purchase data from a consumer panel. The results of several studies are presented to support the method. Certain aspects of consumer behavior, which seem to have an impact in the ability to project brand sales, are also discussed.

Pekelman, Dov and Subrata K. Sen, "Improving Prediction in Conjoint Measurement," JOURNAL OF MARKETING RESEARCH, 16, (May 1979) pp. 211-20.

The authors assert that using an estimate of a utility function (as opposed to linear interpolation) will lead to better prediction of new attribute levels in new product design modification. An analytical procedure, backed with numerical results, is described to prove the enhancement of predictibility. The article is technical in nature.

Pekelman, Dov and Subrata K. Sen, "Measurement and Estimation of Conjoint Utility Functions," JOURNAL OF CONSUMER RESEARCH, 5, (March 1979) pp. 263-271.

Two methods are used in taking the calculated utilities of discrete attribute levels and determining the utilities for other attribute levels. These are linear interpolations and utility functions based on linear programming. They are compared for richness of predictive ability. The latter method is found to be the better predictor and this is shown in a simulated study.

Pennington, Alan L. and Robert A. Peterson, "Interest Patterns and Product Preferences: An Exploratory Analysis," JOURNAL OF MARKETING RESEARCH, (August 1969) pp. 284-90.

A report on a study concerned with the interest patterns of people. In forced choice situations, people choosing different products are found to have different interests. From these differences, people can be said to have a people or non-people orientation. Product preferences can then be identified from these orientations and interest patterns. The study was basically psychological in nature.

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Pessemier, Edgar A., "Managerial Aspects of Market Structure Analysis and Market Maps," MARKETING SCIENCE INSTITUTE Research Program, 1979, Cambridge, Mass.

Written from a managerial standpoint, this article discusses the uses of product and market mapping. The construction of a market map is explained on a step-by-step basis. A market map is used to predict the sales and profit a product position will yield based on customer segment locations. Use of Carroll and Chang's PREFMAP program is illustrated in relation to this. Market maps are held to be useful in creating product strategy and advertising strategy. (U of R HF5415.3 P46x)

Pessemier, Edgar A. and Leigh McAlister, "Varied Consumer Choice Behavior: A Theory, Some Empirical Results, and Their Practical Consequences," MARKETING SCIENCE INSTITUTE Research Program, 1982, Cambridge, Mass.

Pessemier, Edgar A. and H.P. Root, "The Dimensions of New Product Planning," JOURNAL OF MARKETING, 37, (January 1973) pp. 10-18.

Article is primarily about new product introductions as opposed to market segmentation. It discusses in general the steps necessary for a successful new product entry into a market. Some steps are idea generation, project screening, market structure analysis, investment analysis, etc. The use of PREFMAP as a means of segmenting a market during the market structure analysis phase is described in detail.

Peterson, Robert A., "Market Structuring by Sequential Cluster Analysis," JOURNAL OF BUSINESS RESEARCH, (July 1974) pp. 249-64.

An early article on Automatic Interaction Detection (AID) and other market structuring techniques. Cluster analysis, of which AID is a part, is found to have the greatest potential for market structuring. A study is briefly described which shows the greater ability of attitudinal variables to predict purchase as opposed to demographic variables.

Peterson, Robert A. and Ivan Ross, "How to Name New Brands," JOURNAL OF ADVERTISING RESEARCH, 12, (December 1972) pp. 29-34.

Tests to see if consumers "associate certain phonetic sounds with certain product categories" through computer generated random combinations of syllables. While a degree of association was found to exist, some definite demographic biases were also discovered. These biases should be considered when determining a brand name for a new product.

Plummer, Joseph T., "The Concept and Application of Life Style Segmentation," JOURNAL OF MARKETING, 38, (January 1974) pp. 33-37.

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The theory of life style segmentation is discussed; its premise being that the more you understand your customers, the better you can market to them. Life style dimensions include activities, interests, opinions, and demographics. Life style segmentation is said to be valid because it provides a broad, everyday view of consumers. It can be useful in defining a target market, product positioning, and advertising.

Pringle, Lewis G., R.D. Wilson, and E.I. Brody, "NEWS: A Decision Oriented Model for New Product Analysis and Forecasting," MARKETING SCIENCE, 1, (Winter 1982) pp. 1-29.

Punj, Girish, and David W. Stewart, "Cluster Analysis in Marketing Research: Review and Suggestions for Application," JOURNAL OF MARKETING RESEARCH, 20, (May 1983) pp. 134-48.

A very good article on cluster analysis and its uses in marketing research. Previous work in cluster analysis is discussed including prior uses of the technique in marketing. A table is provided which lists many previous cluster analysis studies. A second table lists several different clustering methods. Various clustering algorithms are compared and suggestions are given for conducting an analysis. A two-stage clustering method is suggested. An excellent bibliography concludes the article.

Reynolds, T.J. and J.P. Jolly, "Measuring Personal Values: An Evaluation of Alternative Methods," JOURNAL OF MARKETING RESEARCH, 17, (November 1980) pp. 531-36.

Three methods of collecting and evaluating value profiles, Likert rating scales, rank ordering, and paired comparison procedures are compared for uses in market segmentation. Likert scales are found to be statistically less reliable but also require less respondent time. Their use is not recommended.

Riesz, Peter C., "Revenge of the Marketing Concept," BUSINESS HORIZONS, 23, (June 1980) pp. 49-53.

An article that is critical of the shift in American industry from "science push" to "market pull" research and development. The shift in expenditures is away from basic research toward development and refinement of existing products/markets. The result is a loss of creativity and technological dominance. Reisz states that the answer to this is a recommitment to basic research and development.

Ritchie, J.R.B., "Structuring the Leisure Market-A Multivariate Analysis," DECISION SCIENCES, 7, (July 1976) pp. 547-61.

The goal of the article is to show how multivariate methods such as multidimensional scaling, cluster analysis, and factor analysis can be used to understand a market. The study is based on how respondents structure and rate 12 leisure activities and the criteria they use in doing so. The work is seen as an extension of the scaling techniques developed by Green and Rao (1972) in APPLIED MULTIDIMENSIONAL SCALING.

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Roberts, Mary Lou and J.R. Taylor, "Analyzing Proximity Judgements in an Experimental Design," JOURNAL OF MARKETING RESEARCH, 12, (February 1975) pp. 68-72.

An attempt is made to extend the use of proximity judgements beyond survey research. The experimental design is meant to enable proximity judgements to be used in testing the sensitivity and consistency of respondent's perceptions as influenced by experimental manipulation. MDS and MANOVA are used to this end and the results of a coffee study are said to be encouraging.

Ross, Ivan, "Self-Concept and Brand Preference," JOURNAL OF BUSINESS, 44, (1971) pp. 38-50.

Ross attempts to test the theory that people buy things to enhance the conception they have of themselves. The differences between "actual self-concept" and "ideal self-concept" are explained. A study is described which measures the relationship between self-concept and brand image. An interesting twist to the study is that respondents are not asked to describe themselves, rather, they describe the type of person who would like certain things that they also like. People will become more open or honest when describing "other" people. Different ways of gathering the information are presented.

Rummel, R.J. APPLIED FACTOR ANALYSIS. Illinois: Northwestern University Press, 1970, pp. 195-96, 241-43.

Sampson, Peter and Paul Harris, "A User's Guide to Fishbein," JOURNAL OF THE MARKET RESEARCH SOCIETY, 12, (July 1970) pp. 145-66.

Sands, S. and K. Warwick, "What Product Benefits to Offer to Whom: An Application of Conjoint Segmentation," CALIFORNIA MANAGEMENT REVIEW, 24, (Fall 1981) pp. 69-74.

The concept of "conjoint segmentation" is presented. This is a combination of conjoint analysis and cluster analysis. An example is given using a table radio as the product in question. A conjoint analysis is done and then a cluster analysis is done on the same data. Both methods are briefly described.

Shephard, R.N. and P. Arabie, "Additive Clustering: Representation of Similarities as Combinations of Discrete Overlapping Properties," PSYCHOLOGICAL REVIEW, 86, (1979) pp. 87-123.

A long, fairly technical article in which additive clustering (ADCLUS) is viewed as a discrete analog of principal components analysis. Hierarchical clustering is considered to be a special case of additive clustering. While the article is not of a marketing nature, it does provide insights into the concepts of clusters and their application to market structure.

Sherak, B., "A Beer Segmentation and Brand Mapping Study" in Durand, J. ed., MARKET SEGMENTATION, papers from the conference organized by ADETEM. Paris, March 1969.

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Sheth, J.N., "Brand Profiles from Beliefs and Importances," JOURNAL OF ADVERTISING RESEARCH, 13, (February 1973) pp. 37-42.

A study is described in which a better measure of intent-to-buy was obtained for two instant breakfasts when beliefs about the products were not weighed by their respective importances. The study suggests that the best measure of attitude is a consumer's evaluative beliefs, but these beliefs should not be combined into an overall attitude score.

Sheth, J.N. MODELS OF BUYER BEHAVIOR: CONCEPTUAL, QUANTITATIVE AND EMPIRICAL, Harper & Row, New York 1971.

Sheth, J.N., "The Multivariate Revolution in Marketing Research," JOURNAL OF MARKETING, 35, (January 1971) pp. 13-19.

A good general article discussing the several forms of multivariate analysis. This type of research is often found in various types of segmentation research. Different types of multivariate methods are described and their applicability to marketing problems is considered. Ideas of interdependence among variables is introduced and appropriate analysis methods are postulated.

Shimp, T.A., "Attitude Toward the Ad as as Mediator of Consumer Brand Choice," Working Papers in Marketing, No. H-81-02. Division of Research, College of Business Administration, University of South Carolina.

The article is concerned with how brand choice behavior is influenced by advertising. Attitude toward the advertisement is separated from attitude toward the brand. Attitude toward the advertisement is held to effect brand choice. This is supported by empirical data and suggestions for future research are offered.

Shocker, Allan D. and V. Srinivasan, "A Consumer Based Methodology for the Identification of New Product Ideas," MANAGEMENT SCIENCE, 20, (February 1974) pp. 921-37.

Shocker, Allan D. and V. Srinivasan, "Multiattribute Approaches for Product Concept Evaluation and Generalization: A Critical Review," JOURNAL OF MARKETING RESEARCH, 16, (May 1979) pp. 159-80.

The role of multiattribute research in marketing is discussed in the context of a marketer's products versus its competition. Recent applications of multiattribute research to new product evaluation and concept generation are reviewed and critiqued. Various methodologies are described and evaluated. Some of these are methods based on aggregate responses and consumer decision models. An excellent bibliography concludes the article.

Silk, Alvin J. and Glen L. Urban, "Pretest Market Evaluation of New Packaged Goods: A Model and Measurement Methodology," JOURNAL OF MARKETING RESEARCH, 15, (May 1978) pp. 171-91.

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A long article which is a progress report of a "measurement and model system called ASSESSOR which is designed to estimate the salesr potential of packaged goods before they are test marketed." The entire model is described in detail after current test market evaluation methods are reviewed. The first empirical use of the model is covered as are subsequent studies in which the model was used. The model's goals are to estimate long run market share, sources of sales, and to provide marketing information for the user.

Sirgy, M.Joseph, "Self-Concept in Consumer Behavior: A Critical Review," JOURNAL OF CONSUMER RESEARCH, 9, (December 1982) pp. 287-300.

The author reviews self-concept theory and research in consumer behavior. Many sources are cited and a large bibliography is found at the end of the paper. Relationships between self-image, product-image, the ideal self, etc. are all discussed at a general level with multiple references for the reader's further research. This is an excellent article which also points out areas where future research is needed.

Smith, Wendell, "Product Differentiation and Market Segmentation as Alternative Marketing Strategies," JOURNAL OF MARKETING, 21, (July 1956) pp. 3-8.

An early, often cited article on market segmentation. Arguments are stated in the context of the economic theory of supply and demand and the observed lack of homogeneity in markets. Marketing strategies are viewed as tools which enable management to achieve the minimumization of total costs. The goal of planners in this environment should be to anticipate segments.

Sokal, R.R. and P.H.A. Sneath. PRINCIPLES OF NUMERICAL TAXONOMY. San Francisco: W.H.Freeman, 1963.

Sonquist, J.A. and J.N. Morgan, "The Detection of Interaction Effects," Monograph 35, Survey Research Center, University of Michigan.

Sparks, D.L. and W.T. Tucker, "A Multivariate Analysis of Personality and Product Use," JOURNAL OF MARKETING RESEARCH, 8, (February 1971) pp. 67-70.

Canonical analysis is used to investigate the relationship of personality traits to product use patterns. A study and its findings are briefly described. Results indicate that a general model applicable to all consumer behavior would be very complicated. It is suggested that less ambitious models be pursued.

Staelin, Richard A., "Another Look at AID," JOURNAL OF ADVERTISING RESEARCH, 11, (October 1971) pp. 23-28.

An early article on the use of AID as a technique for market segmentation. The chief advantage of AID is found to be its flexibility to the researcher. Other multivariate techniques are briefly discussed and compared to AID. Large sample requirements and prespecification of variables are found to be the main disadvantages of the method. No empirical data is contained in the article.

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Stefflre, V., "Market Structure Studies: New Products for Old Markets," in Bass, F. et al (eds.), APPLICATION OF THE SCIENCES IN MARKETING MANAGEMENT. Wiley, New York, 1968.

Stewart, David and Neil Hood, "A Methodology for the Evaluation of Segmentation Policy: An Empirical Application in the Car Industry," JOURNAL OF THE MARKET RESEARCH SOCIETY, 23, (July 1981) pp. 137-149.

The effectiveness of market segmentation is studied using a particular type of cluster analysis. The study is based on the attempts of an East European car manufacturer to enter the UK car market.

Stout, Roy G., et al., "Usage Incidence as a Basis for Segmentation," in Y. Wind and M. Greenberg, eds., MOVING A HEAD WITH ATTITUDE RESEARCH. Chicago: American Marketing Association, 1977, pp. 45-49.

Discusses a method of segmentation based on the ways consumers use products--sort of like benefit segmentation. This is based on the premise that a consumer may use the same product on different occasions for different reasons. A study is described which illustrates this method of segmentation, identifying segments based on the "need status" of consumers.

Tashchian, A., R. Tashchian, and M. Slama, "The Impact of Individual Differences on the Validity of Conjoint Analysis," ADVANCES IN CONSUMER RESEARCH, Andrew Mitchell, ed., 9, (1981) pp. 363-366.

An interesting validity study concerning the quality of response in conjoint studies. The willingness to complete a card sort task and quality of response are measured across five demographic variables. Prior knowledge of the subject in question was also related to response quality. Both demographic variables such as race, education, and age as well as prior knowledge are found to be important determinants of conjoint validity.

Taylor, James, "Management Experience With Applications of Multidimensional Scaling Methods," Working paper, Marketing Science Institute, 71-120, (1971).

This article is divided into two main sections. The first describes mapping, what it is and how it is done. An example illustrates the procedure. The second section discusses the uses of mapping including examples of companies using mapping techniques and how mapping can best be used. The article is fairly general in nature and is a good initial article on the subject.

Urban, G.L., "PERCEPTOR: A Model for Product Positioning," MANAGMENT SCIENCE, (April 1975) pp. 858-871.

A model is described in detail which is designed to aid managers in creating new consumer products. The trial and repeat process produces an estimate of the long-run share of a new brand. Multidimensional scaling and perceptual mapping are used to help determine the correct positioning and combination of product attributes. By incorporating current brands into the system, estimates of market share for various new product designs can be obtained.

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Urban, G.L., "SPRINTER: A Tool for New Product Decision Makers," INDUSTRIAL MANAGEMENT REVIEW, 8, (Spring 1967) pp. 43-55.

Urban, G.L., "SPRINTER MOD III: A Model for the Analysis of New Frequently Purchased Consumer Products," OPERATIONS RESEARCH, 18, (September 1970) pp. 805-854.

An older article which describes a model which analyzes test market results of frequently purchased consumer products. Like later models it attempts to assist management in the go/no go decision and can provide information so that the most effective marketing strategy can be devised. The model is described in great detail, from both a conceptual as well as technical point of view. The results of an empirical study are reported to illustrate the use of the model.

Urban, Glen L. and John R. Hauser. DESIGN AND MARKETING OF NEW PRODUCTS. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1980, 618 pages.

A book which covers many marketing research and segmentation topics in the context of new product development and introduction. The entire process of new product development is covered from market definition to managing the mature product. Urban and Hauser have done a lot of work in test market evaluation and sales forcasting--these areas are covered particularly well. Other areas of interest include perceptual mapping, conjoint analysis, and product positioning. (VCU HF5415.15 .U7)

Vitz, Paul C. and Donald Johnston, "Masculinity of Smokers and the Masculinity of Cigarette Images," JOURNAL OF APPLIED PSYCHOLOGY, 49, no. 3, (1965) pp. 155-59.

Product preference is viewed as being inferable from the interaction between a consumer's personality and the product's image. The more masculine a smoker's image of himself, the more masculine is the image of that smoker's regular brand. Nonfilter cigarettes were found to be the most masculine, menthol cigarettes the least. The brands themselves were not named.

Weinberg, Charles B., "The Decay of Brand Segments," JOURNAL OF ADVERTISING RESEARCH, (February 1973) pp. 44-47.

Assumes that while distinct market segments can exist, especially for new products, these segments can deteriorate over time as multiple brand entires create trial. The author asserts that distinct segments can exist only as long as products perceived as distinct exist. It is the goal of later entrants into a market to destroy existing market segments.

Wells, W.D., (ed.). LIFE STYLE AND PSYCHOGRAPHICS. Chicago: American Marketing Association, 1974. 363 pages.

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An excellent collection of articles dealing with life style and psychographics. The impact of psychographics on several phases of marketing (advertising strategy, media selection, channels of distribution) is considered. Some of the writers include Douglas Tigert, Joseph Plummer, and Ruth Ziff--all experts in the field. Wells concludes the book with a summary chapter on the subject. It is an excellent book on the applications of life style research and psychographics. (U of R HF5415.2 .W445)

Wells, W.D., "Psychographics: A Critical Review," JOURNAL OF MARKETING RESEARCH, 12, (May 1975) pp. 196-213.

Psychographics is defined as quantitative research intended to place consumers on psychological dimensions. Five different uses of psychographic research are illustrated through case histories of each use. The status of research in the field is reviewed including the various measures of reliability and validity of psychographics. The area's use in market segmentation is discussed in a general way.

Wells, W.D., "Segmentation by Attitude Types," MARKETING AND THE NEW SCIENCE OF PLANNING, Proceedings of the American Marketing Association, August 1968, pp. 124-26.

Wells, W.D. and D.J. Tigert, "Activities, Interests, and Opinions," JOURNAL OF ADVERTISING RESEARCH, 11, (August 1971) pp. 27-35.

An often cited article which illustrates how psychographics can help describe target audiences and product users. Two studies of consumer products are described which show how consumer's activities interests, prejudices, and opinions effect their consumption. The hypothesis is that sometimes a product isn't a product but rather a behavior pattern. AIO can provide insights into actual as opposed to targeted product usage.

Wildt, Albert R., "On Evaluating Market Segmentation Studies and the Properties of R2," MANAGEMENT SCIENCE, 22, (April 1976) pp. 904-08.

Wildt, Albert R. and John M. McCann, "A Regression Model for Market Segmentation Studies," JOURNAL OF MARKETING RESEARCH, 17, (August 1980) pp. 335-40.

A technical article which examines a regression model which is especially concerned with the idea that consumption behavior has an inherent "component of randomness." This degree of randomness is built into the regression model. The model is compared with ordinary least squares models which exhibit the same phenomenon.

Wilkie, William L., "An Empirical Analysis of Alternate Bases of Market Segmentation," an unpublished doctoral dissertation, Stanford University, December 1970.

Wilkie, William L., "Market Segmentation Research: A Conceptual Analysis," Paper No. 324, Institute for Research in the Behavioral Economic, and Management Sciences, Purdue University, Sept. 1971.

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Wilkie, William L. and Joel B. Cohen, "An Overview of Market Segmentation: Behavioral Concepts and Research Approaches," MARKETING SCIENCE INSTITUTE Working Paper, 1977, Cambridge, Mass.

The authors attempt to provide an overall perspective on segmentation research. This includes concepts and criteria for segmentation, past approaches to segmentation, and alternative bases for defining market segments. The definition of a "true" market segment is provided. The development of segmentation research is stated to have developed along two paths, correlated and product-instrumentality. Correlational studies are for promotional strategy and product-instrumentality studies for positioning. (U of R HF5415.3 .W55x)

Wilkie, William L. and Edgar A. Pessemier, "Issues in Marketing's Use of Multiattribute Attitude Models," JOURNAL OF MARKETING RESEARCH, 10, (November 1973) pp. 428-41.

The authors attempt to settle a controversy surrounding the proper application of a compensatory multi-attribute attitude model to the brand competitive marketing environment. A review of previous studies is presented in the form of a large matrix and three areas for future research are given; model conceptualization, component measurement, and testing methodologies. Criterion for future work in these areas is also given. An excellent bibliography concludes the article.

Willson, E.J., "Computational Segmentation in the Context of Multivariate Statistics and Survey Analysis," JOURNAL OF THE MARKET RESEARCH SOCIETY, 16, no. 2, 1974.

Wind, Yoram, "A New Procedure for Concept Evaluation," JOURNAL OF MARKETING, 37, (October 1973) pp. 2-11.

A concept testing procedure is suggested which relies on concept evaluation and positioning by market segments. The procedure incorporates multidimensional scaling and conjoint measurement methods into the overall framework. Concept testing occurs prior to new product development and is very important in new product design. Two methods of analysis interpretation are presented and several advantages of the procedure are listed.

Wind, Yoram, "Brand Loyalty and Vulnerability," in A. Woodside, J. Sheth, and P. Bennett,eds., CONSUMER AND INDUSTRIAL BUYING BEHAVIOR, New York: North Holland, Inc., 1977, pp. 313-19.

Wind, Yoram, "Issues and Advances in Segmentation Research," JOURNAL OF MARKETING RESEARCH, 15, (August 1978) pp. 317-337.

A very good article on segmentation research. Areas covered include problem definition, research design problems, methods of data collection and data analysis, and data interpretation. Segmentation research is said to fall into two areas: a priori or clustering-based. Several different types of segmentation methods in these areas are covered. An excellent bibliography concludes the article.

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Source: https://www.industrydocuments.ucsf.edu/docs/fhk0000

Wind, Yoram, "Toward a Change in the Focus of Marketing Analysis: From a Single Brand to an Assortment," JOURNAL OF MARKETING, 41, (October 1977) p. 12.

A short article which states that the usual focus on the purchase of a single brand as the dependent variable in marketing studies is misleading. Rather, the focus should be on an assortment of brands. In other words a brand family which considers brand switching and close substitutes.

Wind, Yoram and R.N. Cardozo, "Industrial Marketing Segmentation," INDUSTRIAL MARKETING MANAGEMENT, 3, (March 1974) pp. 153-65.

The authors claim that market segmentation is not being used in industrial marketing in a strategic sense. It is being used to explain success/failure rather than as a tool to facilitate success. A two-step segmenting process is described.

Wind, Yoram, P.E. Green, and A.K. Jain, "Higher Order Factor Analysis in the Classification of Psychographic Variables," JOURNAL OF THE MARKET RESEARCH SOCIETY, 15, (1973) pp. 224-32.

Woodside, A.G. and James Clokey, "Multi-attribute/Multi-brand Models," JOURNAL OF ADVERTISING RESEARCH, 14, (October 1974) pp. 33-40.

Several examples of previous multi-attribute models are mentioned. Multi-brand models are based on the assumptions that one's attitude toward a brand is influenced by one's attitude toward other brands. The author's model is based on an analysis of the desirability of various product attributes across several brands. The model is applied to a study which is explained in detail.

Worcester, Robert M. and John Downham. CONSUMER MARKET RESEARCH HANDBOOK. 2nd ed. New York: Van Nostrand Reinhold Company, 1978, 739 pages.

A general text covering various areas of consumer research. General methods of collecting data and conducting research are covered by various writers. Chapters 13 and 14 are particularly useful in that they cover multivariate research and market segmentation and construction, respectively. This text is not as technical or as thorough as some of the other marketing research texts (Green and Tull, Urban and Hauser), yet still is a good source for information.

Yankelovich, Daniel, "New Criteria for Market Segmentation," HARVARD BUSINESS REVIEW, 42, (March-April 1964) pp. 83-90.

Early article suggesting several, then novel, ways of segmenting markets. Ten markets of consumer and industrial products are observed to see the impact of nondemographic segmentation. Several examples are given from well known products. Market segmentation is found to be extremely helpful in creating effective marketing strategy. Most of the segmentation examples are simplistic, but the article is helpful in that it touches on things which will be further developed in later articles.

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Yuspeh, S. and G. Fein, "Can Segments Be Born Again?," JOURNAL OF ADVERTISING RESEARCH, 22, (June-July 1982) pp. 13-22.

A smaller study is shown to not be able to replicate a larger one. Reasons are given for this. Moral of the story is that using segment predictors in a study that have been identified in an earlier study can lead to inaccurate segment generation.

Ziff, Ruth, "Psychographics for Market Segmentation," JOURNAL OF ADVERTISING RESEARCH, 11, (April 1971) pp. 3-9.

The author begins with a general discussion of psychographics including the difficulty in even correctly defining the term. A study is described which provides proof that psychographics can be used for market segmentation. The study attempts to identify attitudes that can cause usage of a large number of products or products from several different classes. No attempt is made to tie the psychographic segments with any demographic information.

Zufryden, F.S., "ZIPMAP: A Zero-One Integer Programming Model for Market Segmentation and Product Positioning," JOURNAL OF OPERATIONAL RESEARCH SOCIETY, 30, (1979) pp. 63-70.

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